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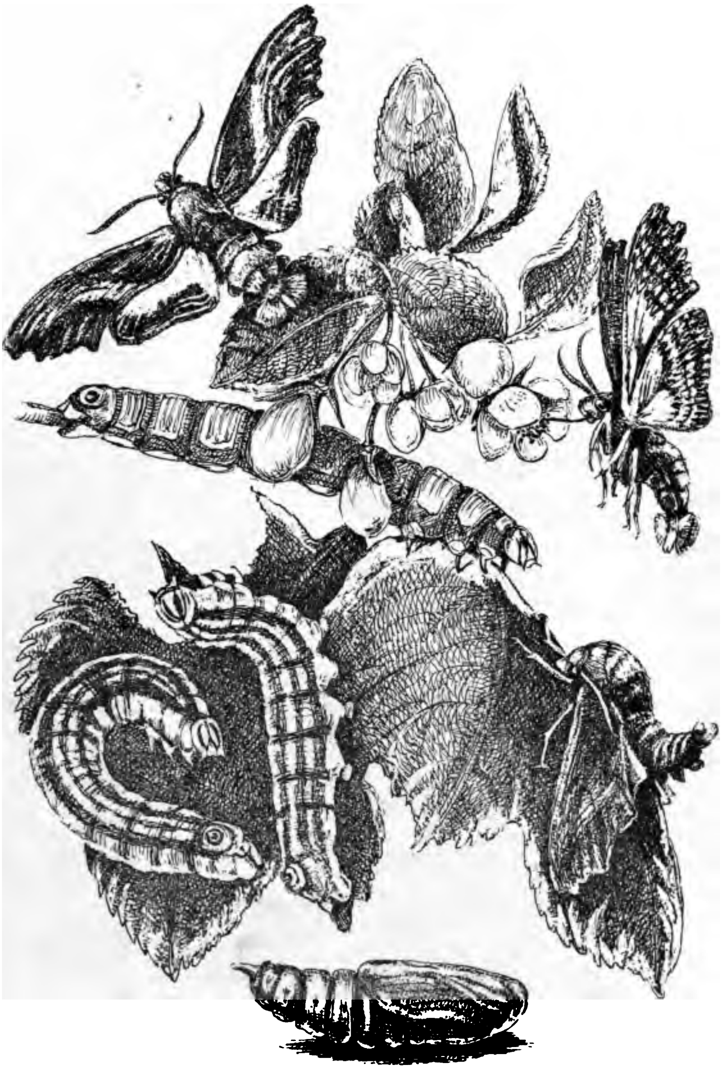

Thyreus Abbottii. (Sw:)
Pupa food, Grape.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. X. JANUARY, 1899. No. 1.

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THYREUS ABBOTII (Swains).

Our illustration of this curious Sphinx moth was made from a pen and ink sketch drawn many years ago by Titian R. Peale. The larvæ feeds upon species of *Vitis* and *Ampelopsis*. The distribution of the species is Canada, eastern United States, westward to Iowa.

—o—

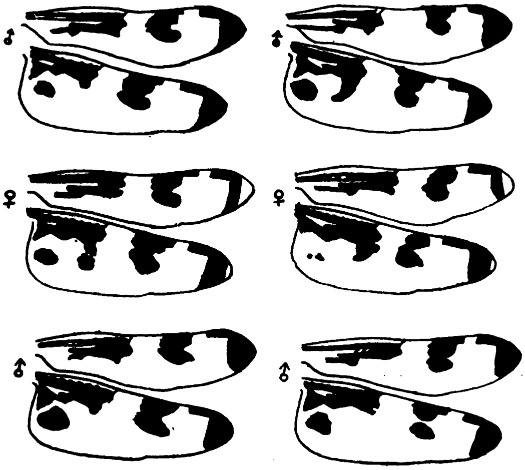
NOTES ON CELITHEMIS FASCIATA (Odonata);

With a Short Description of the Female.

By J. S. HINE, Columbus, Ohio.

Very little has appeared in literature regarding *Celithemis fasciata*. Within the last two years I have seen no less than a dozen specimens of the species, and during the past summer I had the pleasure of observing in the field and collecting half that number near Akron, Ohio. To my knowledge the female has never been described, so I give below a short description of that sex.

Mature Female.—Head with vertex and dorsal edge of frons dark shining brown, with a violet tinge from some views; eyes, antennæ, mandibles and distal edges of labrum and labium dark; other parts yellow. Thorax yellow with a wide median, a humeral and some side blotches dark; legs black; fore wings hyaline with the following dark; a regular, transverse band before the apex, an irregular blotch on the costal half between the pterostigma and the nodus, and a patch extending from near the base to the nodus, occupying a third or more of the width of the wing. This latter is divided longitudinally from its base for at least two-thirds of its length, and touches the costa at its distal extremity only. The hind wings have the same pattern as the fore wings, but the apical band is wider, and consequently the hyaline space at the extreme apex is smaller. There are two isolated spots, one behind the apex and the other behind the base of the basal patch, which, on this wing, extends clear to the base, where it sends back a triangular projection. Abdomen black, slightly pruinose, with a small dorsal patch on 2, a larger, nearly triangular one on each of 3, 4, 5 and 6, and a small one on 7, yellow. Length of abdomen, 21; hind wings, 28 mm.



Right wings of six specimens of *Celithemis fasciata*

Teneral Female.—This specimen differs from the other female, 1st, in the coloration of the hind wing, Instead of the isolated spot behind the apex of the basal patch, the inferior angle of that patch is produced without interruption. The other isolated spot is reduced and appears as two small dots. 2nd, the abdomen shows yellow markings laterally and ventrally. Laterally these markings appear as patches on segments 1 to 6. Length of abdomen, 20; hind wing, 27 mm.

The species has the same habits in the field as *elisa* or *eponina*. It flies very nervously over the water before you for a moment, and then with a sudden turn vanishes from sight. In the after part of the day they may be found resting on the tips of reeds or sticks in the vicinity of water. When the collector approaches they flit away, but in case no effort is made to capture them they come to rest again on the same perch. I have seen an individual duplicate this performance no less than four times.

I have before me at the present time four specimens from Akron, Ohio, taken by myself on June 23 and July 20, 1898; and two specimens from Indiana, taken by E. B. Williamson. Chas. Dury has taken the species at Cincinnati, Ohio.

The accompanying drawings will explain themselves. They represent the right wings of six different specimens. I made them to show the variation in the outline of the dark markings. I have never seen two specimens exactly alike in this respect.

THE BEES OF KANSAS.

By T. D. A. COCKERELL, N. M. Agr. Exp. Sta.

The bee faunæ of New Mexico and Illinois are fairly well known, and have very few species in common. It is interesting to ask, where do the eastern types find their extreme western limit, and at what points do they give way to those of the West and South? With these questions in mind, any information about the bee-fauna of Kansas is particularly welcome; and I have been very glad to learn from Mr. J. C. Bridwell, of Baldwin, that he is about to make a study of the bees of his region.

Baldwin is in Douglas county, at the eastern end of the State. A box of bees collected at that place has just been received from Mr. Bridwell, and the species, so far as I have determined them, are the following:

Bombus virginicus, Oliv., *B. separatus*, Cress., *B. pennsylvanicus*, Deg., *Anthophora abrupta*, Say, *Synhalonia frater*, Cress., *Melissodes bimaculata*, Lep., *M. obliqua*, Say, *M. perplexa*, Cress., *Epeolus bifasciatus*, Cress., *Calliopsis andreniformis*, Smith, *Protandrena cockerelli*, Dunning, *Prosapis pygmæa*, Cress., *Sphecodes mandibularis*, Cress., *Augochlora humeralis*, Patton, *A. viridula*, Smith, *A. similis*, Rob., *A. confusa*, Rob., *Halictus parallelus*, Say, *H. ligatus*, Say, *H. fasciatus*, Nyl., *Andrena mariæ*, Rob., *A.* [illegible], Ashm., *A. vicina*, Smith, *A. salicinella*, Ckll., *A. geranii*, Rob., *A. claytoniæ*, Rob., *A. say*, Rob., and also an *Halictus* which might be *forbesi*, Rob., but for its dark wings.

This list shows that the Baldwin bee-fauna is essentially the same as that of Southern Illinois. There are two western types only: *Andrena salicinella*, hitherto only known from New Mexico, and the *Protandrena*, a Kansas species of a western genus. It is to be remarked that Mr. Baldwin sends both sexes of *Protandrena cockerelli*, the species being hitherto known only by a single ♀ from Topeka. The ♂ is practically identical with that of *P. asclepiadis*, Ckll., of which the is ♀ unknown; but it does not necessarily follow that *cockerelli* is a synonym of *asclepiadis*, since *mexicanorum*, the ♀ of which is quite distinct from *cockerelli*, has also a nearly identical ♂.

It is worth while to remark that *Andrena claytoniæ* is so like *A. hippotes* that they would certainly be confused by one not specially looking for the differential marks, the best of which is in the shape of the process of the labrum.

From Northwestern Kansas we have a list of bees collected by Dr. Williston, and recorded by Mr. Patton in Bull. U. S. Geol. Surv., Vol. V. The species are *Colletes armata*, Patt., *Augochlora humeralis*, Patt., *Nomia nortoni*, Cress., *Halictus parallelus*, Say (*occidentalis*, Cress.), *Calliopsis coloradensis*, Cress., *Epeolus occidentalis*, Cress., *Nomada texana*, Cress., *Bombus pennsylvanicus*, Deg., *B. scutellaris*, Cress. This is a mixture of Eastern and Colorado types.

From Barber county, in Southern Central Kansas, bordering on Oklahoma, we have a list of species collected by Prof. Cragin, published in Bull. Washburn College Lab. of Nat. Hist. (1885). The species are *Bombus pennsylvanicus*, Deg., *B. scutellaris*, Cress., *Anthophora occidentalis*, Cress., *A. smithii*, Cress., *Synhalonia albata*, Cress., *Melissodes menuacha*, Cress., *M. atripes*, Cress., *Centris lanosa*, Cress., *Melecta interrupta*, Cress., *Nomia nortoni*, Cress., *Agapostemon radiatus*, Say (*tricolor Lep.*), *Augochlora viridula*, Sm. (*lucidula*, Sm.), *Pseudopanurgus æthiops*, Cress.

This list is very different from the others, and nearly agrees with the fauna of Central Texas. The *Centris* is quite a Mexican type. There are other Kansas bee-records, but without precise localities, so it is not worth while to enumerate them.

RECOLLECTIONS OF OLD COLLECTING GROUNDS.

By H. F. Wickham, Iowa City, Iowa.

VII.—The Vicinity of Colorado Springs.

Two years ago, in company with my wife and a friend, I spent a few weeks in the mountains of Colorado. Our first stop was made at Colorado Springs, which we reached on the fifteenth of June, apparently in the very height of the collecting season.

The town lies on the extreme eastern edge of the Rocky Mountain region proper, in a rolling piece of country broken by many small hills which rise to the westward until they are lost in the grander heights of the Cheyenne Mountains and the numerous summits which surround the snow-covered apex of Pike's Peak. The lower levels are covered with the characteristic weeds and shrubs of the arid plains, while at a height of two or three hundred feet above the creek the scrub oaks put in an appearance. The numerous canons which open from the hills support an almost entirely different class of plants, the oaks becoming more plentiful and being intermixed with numerous conifers and flowering shrubs. These shrubs often extend out of the mouths of the canons along the courses of the little creeks, and in consequence the accompanying insect-fauna which we might otherwise consider as being confined to the mountain ranges is carried out some distance on to the adjacent plain.

The altitude of Colorado Springs is approximately 6,000 feet. But since it is the most favored summer resort in the State and much frequented by a class of health and pleasure seekers, business enterprise has resulted in the construction of railroads or electric lines to many points of interest in the vicinity which would otherwise be difficult of access without the expenditure of considerable time. Thus it is easy to visit the Garden of the Gods, the canons in the Cheyenne Mountains and those near Manitou without any great exertion. Some of these are very rich in insects, particularly Williams' Cañon, which lies close to Manitou. The railroad to the summit of Pike's Peak offers a smooth walk for the pedestrian, but the results of our high altitude collecting here, by no means encourage a recommendation to others.

While not wishing to present a complete list of our captures here, it seems worth while to mention some of the most striking characteristics of the coleopterous fauna, particularly since the region is one likely to be visited by any transcontinental traveler. By a perusal of the following notes some idea of the character of the beetles obtained may be secured.

The only *Cicindela* seen in June was *C. repanda*, which was common along the creek in the north Cheyenne cañon. In July I took some *C. punctulata* on muddy flats in fields near the Rock Island railroad tracks; they were hardly typical, but approximated the variety *micans* very closely. A single example of *venusta* was taken during this month, running along a sandy road.

Among the Carabidæ we met with comparatively few species, and the genera *Nebria*, *Notiophilus*, *Dyschirius* and *Clivina*, all of which we expected to see, were quite absent. Many *Pasimachus elongatus* were found in the sandy soil beneath ties along the Rock Island tracks, but none occurred elsewhere, with the single exception of a specimen from the north Cheyenne cañon. *Bembidium lugubre* and *B. bimaculatum* were both rather abundant along small streams, particularly in Williams' Cañon, where we also found an example of *Carabus serratus*. *B. bifossulatum*, *consimile* and *versicolor* were rather common on a small saline mud-flat near the town. *Pterostichus incisus* occurred with *Pasimachus* in moderate numbers; sometimes it was also accompanied by *P. luczotii*, which, however, was more common in the damp cañons. *Dicælus sculptilis* was captured under stones in sheltered spots in Williams' and Cheyenne cañons. About roots of plants we scratched up *Cymindis planipennis*, *Philophuga amœna* and *Blechrus nigrinus*, with an occasional *Piosoma setosum*, though this last species is quite as frequently seen under boards in open spaces, in company with *Nothopus zabroides*.

Dytiscidæ were not very abundant, and we could find none whatever in the little stream which is followed by the Pike's Peak road. However, we got a fine lot of *Agabus cordatus* in a rill which runs through Williams' Cañon. This species is easily taken by lifting up small stones, under which it hides; and, being by no means agile, capture readily follows detection. *A. lugens*, two species of *Hydroporus* and a *Cœlambus* accompanied it. *Dryops striatus* was very abundant. *Rhantus* *binotatus* was once taken in some numbers in a small muddy pool among the low hills near the town.

Of the clavicorn beetles only a few seem to require mention. *Silpha ramosa, truncata* and *lapponica* were met with on carrion. *Batrisus frontalis* occurred under ties along the railroad track. *Exochomus marginipennis* and its variety *æthiops* was beaten from sage-brush, *Epilachna corrupta* was swept from plants on low ground. *Hyperaspis 4-vittata* was not rare, being scratched up from about the roots of plants. A very pretty little insect which I have referred with some doubt to *Hyperaspidius trimaculatus* was secured in abundance on cacti, where they evidently feed on the Aphides which infest these plants so badly. *Erotylus boisduvalii* was seen quite frequently in the canons, usually resting on the under sides of pine logs. Some few *Languria lecontei* were found in low meadows. *Carpophilus brachypterus* was very abundant on cactus blossoms.

Buprestidæ were not very common as a rule. However, in Cheyenne Cañon we took *Buprestis maculiventris* and *Chrysobothris trinervia* on pine logs, *Agrilus anxius* on poplar, and *Anthaxia æneogaster* on flowers. In Williams' Cañon *Acmæodera pulchella* was extremely abundant on flowers in July, while with it occurred *A. sparsa* in much smaller numbers. *Rhyncheros sanguinipennis* frequented the same situations. *Collops bipunctatus* was plentiful on low plants in damp spots near the town. *Trichodes ornatus* was partial to flowers on the higher altitudes, while *Clerus abruptus* occurred mostly on plants in the arid districts.

In the Garden of the Gods *Euphoria kernii* was found in some numbers on flowers of *Argemone mexicana*. A single *E. fulgida* was taken at the mouth of the Cheyenne Cañon, while *Trichius affinis* was abundant on flowers of shrubs above the Seven Falls, a few occurring also in Bear Creek and William's Cañons.

The Cerambycidæ were hardly as plentiful as one would expect. *Batyle suturalis* and *ignicollis* both occurred on thistle and other blossoms rather commonly, chiefly in the hills about town. *Leptura chrysocoma* and *L. sanguinea* were found along the Pike's Peak road above Manitou. *Acmæops longicornis* was occasionally seen on flowers near Bear Creek. *Monohammus scutellatus* and *Xylotrechus undulatus* were taken from pine logs in Cheyenne Cañon, while *Monilema annulatum* was obtained in small numbers on cacti.

Chrysomelidæ were very abundant. *Euryscopa lecontei* was beaten from scrub oak, in company with *Coscinoptera dominicana*. *C. axillaris* was very plentiful on various low plants, in company with the much less abundant *C. vittigera*. The other members of the family must mostly be passed over without notice; but it seems worth while to record the capture, near the town, of numbers of *Microrhopala cyanea*, varying from blue to green, and well up in Williams's Cañon we found a few *Odontota collaris* on grass blades. The Tenebrionidæ offer little of interest, most of the species taken having been found under ties along the railroads. Mention may be made of *Asida opaca*, *A. polita*, *Eleodes extricata*, *obsoleta*, *tricostata*, *longicollis*, *lecontei* and *nigrina*, and *Embaphion muricatum*. *Meloe sublævis* was taken in considerable numbers on a sandy flat inside the city limits, crawling about during the morning hours. *Zonitis bilineata* was found rather rarely on composites in July.

Rhynchophora were abundant in individuals; no sweeping could be done in patches of weeds on low ground without yielding some of the forms belonging near *Smicronyx*. On various flowers *Rhynchites eximius* occurred in great numbers, being one of the very commonest insects during June, though much rarer in July. I never met with this beautiful weevil at any other point, and it seems quite uncommon in collections, in spite of this wonderful local abundance.

A NEW SPECIES OF NOMOTETTIX FROM KANSAS.

By Dr. J. L. Hancock.

Among some Tettigidæ kindly sent to me by Prof. Hugo Kahl, of the Kansas University, I find an example of a species of *Nomotettix* which is not referable to any described species. I append the following brief description, pending the appearance of a more extensive paper on the whole group, which will contain a figure of this species.

Nomotettix acuminatus, sp. nov.

Similar to *N. parvus*, differing as follows: Larger stature, including relative proportions of body, vertex from above more acute-angulate, the mammillæ of occiput more distinct, the anterior margin of dorsum a little more produced over the head. Wings posteriorly reach slightly beyond the apical process. From *cristatus* it is distinguished by the more slender form of the body, besides having the median carina of the pronotum less arched longitudinally.

Length of ♀, 9 mm.; pronotum, 8 ; hind femora, 5: antenna. : .5. Locality, Lawrence, Kan. Prof. Hugo Kahl.

Four New Entomophilous Wasps.

By William H. Ashmead.

PISONOPSIS Fox.

(1) **Pisonopsis triangularis**, n. sp.

♀.—Length 6 mm. Stature of *Bothynostethus distinctus* Fox. Black, closely, opaquely punctate. Ocelli arranged almost in an equilateral triangle. Eyes slightly convergent above, with a median emargination within, but not deeply emarginated, as in *Pison*. Clypeus with a median triangular production Mandibles beneath strongly emarginate at basal third and rufous from the emargination to apex. Metathorax rugulose, with a median furrow and a delicate carina, the furrow lineated on either side from the carina. Wings subhyaline, the tegulæ, stigma and veins brown-black; the submedian cell is distinctly shorter than the median; the first recurrent nervure is interstitial with the first transverse cubitus, while the second recurrent joins the second submarginal cell at its apical fourth. Abdomen distinctly punctate, the dorsal segments 1-4 broadly depressed at apex and clothed with a silvery or at least glittery pubescence, especially noticeable laterally; ventral segments 2-5 narrowly testaceous at apex and finely, closely punctate. Longer spur of hind tibiæ nearly as long as the basal joint of tarsi.

Hab —Colorado. Carl F. Baker Collection, No. 2061.

Type, No. 5064, U. S. N. M.

NITELIOPSIS Saunders.

(2) **Niteliopsis striatipes**, n. sp.

♀.—Length 6.5 mm. Head and thorax black, finely, closely, cribrately punctate, the face, temples, pronotum and pleura with a silvery pubescence; abdomen rufous; legs black, the tarsi more or less rufous, brownish at base, while all the tibiæ have a white stripe outwardly. The clypeus is strongly produced medially and again produced medially into a quadrate production. Wings hyaline, broadly fuscous at apical margins; the second submarginal cell receives both recurrent nervures; while the submedian and median cells are nearly of an equal length.

Hab -California. Carl F. Baker Collection, No. 2375.

Type, No 5065. U. S. N. M.

HARPACTUS Jarine.

(3) **Harpactus howardi**, n. sp.

♀.—Length 5.5 mm. Head and thorax black; abdomen rufous, smooth, impunctate; inner orbits from base of clypeus and narrowed above to beyond the middle of face, the anterior margin of the clypeus, the scape beneath, a stripe on the front tibiæ anteriorly and a slight line on middle tibiæ near the base, yellow; mandibles, except apex, black. The metathorax has a distinct triangular area at base, which is smooth except some lineations at extreme base. Wings hyaline the stigma and veins brown-black; the submedian cell is much longer than the median; both recurrent nervures join the second submarginal cell, the first at the middle, the second *before* the middle, of its apical half.

Hab.—Claremont, Cal. Collected April 18, 1898, by Dr. L. O. Howard.

Type, No. 5070, U. S. N. M.

(4) **Harpactus cockerelli,** n sp.

♀.—Length 5 mm. Head and thorax black, but clothed with a short whitish or silvery pubescence, and giving the insect a very hoary appearance; inner orbits narrowly anteriorly, the anterior margin of clypeus the palpi, the mandibles basally, the antennæ except the scape, pedicel and first three or four joints of flagellum above, the tegulæ, knees, tibiæ at base, the anterior and middle tibiæ in front, and more or less of the tarsi, honey-yellow or pale ferruginous. Wings hyaline, the costa and stigma brown black, the internal veins paler: the venation agrees with *H. howardi*, except that the second recurrent nervure joins the second submarginal cell *at the middle* of its apical half. Abdomen rufous, the dorsal segments rather broadly margined with a whitish or silvery pubescence at apex.

Hab.—Mesilla Park, N M. Collected June 9, 1898, by Prof. T. D. A. Cockerell.

Type, No. 5071, U S. N. M.

NOTES OF MISSOURI SPHINGIDAE.

By R. R. Rowley, Louisiana, Mo.

Of the genus *Philampelus*, *achemon* is our commonest species, and may be said to be fairly plentiful most years. The larva is much like that of *pandorus*, but may be known by the oblong instead of round, lateral yellow spots. Both want the caudal horn at maturity and are remarkable for their short, thick appearance at rest, the head being withdrawn into the swollen thoracic segments. Both feed on grape and woodbine.

Of five larvæ of *achemon* taken September 30, 1897, two had a light pea-green ground color; two, smoky, yellowish brown and one a deep reddish brown. The young larvæ of *Philampelus* have long, slender caudal horns that curve toward the head like a dog's tail, but only a polished wart at maturity. Both species mentioned above are double-brooded and the August imagoes of *pandorus* have rosy patches on the hind margins of both wings, as I have seen in Mr. O. C. Poling's collection. I have found the larvæ of *pandorus* rare, but have taken more imagoes at light than *achemon*. Mr. Poling has informed me that he obtained during the past summer a goodly number of the former on wild grape.

P. vitis is unknown to me, but may be looked for in southern Missouri.

Although a number of weeds are given as the food plants of *Deilephila lineata*, I have never found the larva on anything but purslane; have taken the moth at flowers at mid-day as well as at dusk.

D. chamaenerii is probably not found here, though its food plants are abundant.

The larva of *Hyloicus plebeius* feeds on trumpet creeper and lilac, but I have not found it common. Have taken the imago at light. Mr. Poling finds some noticeable variation in the moths.

I captured a beautiful apparently fresh imago of *Dilophonota ello* on the railway station at Mexico, Mo., October 10, 1897. It had the appearance of a home-bred moth. Could this insect have flown from the tropics to Missouri without disturbing the scales on its wings?

Dolba hylæus is one of our commonest hawks. The larva feeds on paw-paw and the species is probably double-brooded. The color lines that shade the sphingial bands are very bright, especially on the young larva. The little pupa is much like that of the genus *Sphinx*, and larva and pupa alike closely ally this hawk to *plebeius*.

Two specimens of *Sphinx eremitus* have been taken at flowers by Mr. Poling, but we have searched the mints in vain for the larvæ.

Sphinx gordius is a rare species with us. I have not taken the larva, but Mr. Sweet has a record of several found feeding on apple.

Sphinx chersis, as well as *S. drupiferarum*, are uncommon in eastern Missouri. Mr. Sweet found the larva of the former on ash and the latter on apple and plum.

S. kalmiæ is another probable member of our *Sphinx* fauna, but larva and imago alike are unknown to the writer. Search for the larva on ash and lilac.

Of the *Macrosilas*, *carolina* is most abundant. I have found the larva feeding on tobacco, tomato, red pepper, ground cherry, potato, jimson weed and matrimony vine. *M. celeus* is less common. Have found the larva on tomato and potato. I have neither taken the larva nor imago of *M. cingulata* in Missouri, though I found it a common hawk at Fort Smith, Ark.

The pupa is easily distinguished by its doubly-curved tongue case, so unlike that of *celeus* or *carolina*.

Mr. Otho C. Poling has taken *cingulata* at Quincy, Illinois, and thinks it feeds on a solnaceous plant. Search for the larva on convolvulus plants (sweet potato, bind-weed, morning glory, etc).

Out of twenty larvæ, September, 1897, I obtained but one pupa of *M. carolina*. Nineteen of them were parasitized. I have found dark brown larvæ of *M. carolina* only on jimson.

Daremma undulosa is common about Curryville, and Mr. Poling has found the larvæ plentiful at Quincy.

I have found the larvæ on ash in August. There is much variation of color in the caterpillars. The moth looks not unlike *Ceratomia amyntor*, but some large males have a faint grayish green tinge that gives a handsome appearance to the fly. The larvæ of *Ceratomia amyntor* are quite common some years. Unlike the larvæ of other hawks, they have four fleshy horns behind the head. The whole larva has a rough, granular appearance, in perfect harmony with the harsh, toothed foliage on which it feeds. Mr. Ralph Sweet took quite half a hundred larvæ of *amyntor*, one September, from a single elm tree.

Of *Thyreus abbotii* I have seen but one larva taken on grape. It is probably common, though I have not found it so. Mr. Poling showed me a number of pupæ of *abbotii* from larvæ taken at Quincy. The larva of *Thyreus* has no caudal horn.

Ællopos titan and *Amphion nessus*, as well as *Lepisesia flavofasciata*, may be sought at early flowers, as serviceberry and lilac. They fly at mid-day and are early spring species. I have seen no one of them in Missouri.

Hemaris tenuis, if it be a good species, is probably an inhabitant of Missouri. The writer has taken a moth at flowers in April that answers to the description of this hawk. *H. diffinis* is very common. I have taken the fly at horsemint flowers in May and thistle blooms in August. The larva feeds on buckberry, snowberry and feverwort. *H. thysbe*, like *diffinis*, hovers over early flowers and thistle blooms in the hot sunshine in August. Both *diffinis* and *thysbe* are double-brooded.

The larva of *thysbe* is common on black-haw and snow-ball, and may be known by the toothed yellow collar behind the head.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer for each number three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., JANUARY, 1899.

THE NEWS is ten years old, or, rather, is entering its tenth year. Since THE NEWS entered on its career there have been many changes. Since our first number, of sixteen pages appeared, Entomology has wonderfully advanced; more persons are interested; it is largely taught in our schools and colleges; economic Entomology is recognized as a valuable study. A number of our valuable workers have joined the silent majority, but let us hope that their places may be filled by others just as enthusiastic, industrious and able. We are not infrequently confronted with the criticism that the subject has lost its poetry and the delicate touch of Nature has been swept away, and, in its place, there is left a dreary list of scientific names, whose meaning can only be known to a favored few, with large scientific libraries at their elbow We try to remedy this in THE NEWS, but receive no help from the critics; they talk, but do not act. We admit that descriptions of new species are as dry as the dust under an infested specimen; but we owe more to the systematic worker than to the growler, who proclaims from the housetops what should be, but has never put pen to paper. One good friend says we should give less space to "duns" for subscription money and devote the space to original entomological observations, and charge two dollars for THE NEWS. When we lie awake half the night devising means to get the one dollar due us, could we be expected to stay up all night trying to get two? Dollars with some entomologists seem to be as scarce as the males of *Pelecinus polycerator*

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

The New Peach Mite in Ohio.—Apropos to the statement of Prof. W. G. Johnson, in the December, 1898, number of Entomological News, regarding the occurrence of this pest in Maryland, I will say that in August, 1898, my assistant, Mr. C. W. Mally while inspecting two nurseries in this State, found the injury so characteristically described by Prof. Johnson, but was not able at the time to determine the nature of the depredator, and for want of time the matter was not followed further. In one very extensive nursery the damage was quite serious, the greater portion of a block of upwards of 500,000 young peach trees showing more or less of the effects of the insect. I may add that the two affected nurseries were located near to or south of lat. 40 degrees north.—F. M. Webster.

The new synonymic catalogue of North American butterflies, by Dr. Henry Skinner, is now ready. See advertisement on cover.

Owing to the fact that we have placed The News with another printing establishment, not familiar with scientific work, it is unavoidably late. We will depend on our printer to do better in the future. Editors.

Mordellidæ Notes.—Having occasion to overhaul my Mordellidæ brings a few memoranda that may be of interest. From Prescott, Arizona. I have examples of a species of *Pentaria*, which seems undoubtedly to be *decolor* Champ., as described in "Biologia," vol. iv, pt. 2, p. 256.

A specimen from Vera Cruz, which seems to fit the description of *Pentaria brevicornis* Champ., I cannot distinguish from my numerous specimens of *fuscula* Lec from Colo. and N. Mex.; the possibility of such identity is spoken of by Mr. Champion (p. 254), but my one specimen does not enable me to do more than partially confirm this suspicion. A fine example of *Tomoxia hilaris* Say, is among my (Vera Cruz) specimens.

Mr. Champion gives one distinction (p. 272) between *Mordella melæna* Germ. and *scutellaris* Fab. which is not mentioned by Smith in his Mordellidæ, vol. 10, Trans. Am. Ent. Soc., p. 82, *i. e.*, *melæna* "differs from *scutellaris* by its short clavate antennæ." I find it much the easiest character for separating species. *Mordella serval* Say, seems rather a northern species—I have one pair from Salisbury, Vt., another pair from the subalpine region of Mt. Washington, N. H., and one specimen from Brookline, Mass.

Among the material sent me by Mr, Wickham from Brownsville, Texas (289), is a single specimen of an interesting new species of *Mordella*, which seems to come near *tenuipes* Champ.; also (298) one example of a minute new species of *Mordellistena* near *pulicaria* Champ.—Fred. C. Bowditch.

Entomological Literature,

COMPILED BY P. P. CALVERT.

Under the above head it is intended to note such papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in HEAVY-FACED TYPE refer to the journals, as numbered in the following list, in which the papers are published; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in parentheses.

5. Psyche. Cambridge, Mass., Dec., '98.—**7.** U. S. Department of Agriculture, Division of Entomology, Washington: Bulletin 17, new series, '98.—**15.** Biologia Centrali-Americana. London, part cxliv, Oct., '98.—**19.** Horæ Societatis Entomologicæ Rossicæ, St Petersburg, '98.—**41.** Entomologische Nachrichten Berlin, Nov., '98.—**49.** Termeszetrajzi Füzetek, xxi, Budapest, Oct. 1, '98.—**53.** Proceedings, United States National Museum, Washington, '98.—**56.** Mittheilungen, schweizerischen entomologischen Gesellschaft, x, 4, Schaffhausen, Oct., '98.—**58.** Revista Chilena de Historia Natural, ii, 9, Valparaiso, Sept., '98.—**87.** Revue Scientifique, Paris, '98.—**97.** Zeitschrift für wissenschaftliche Zoologie, lxv, 1, Leipsic, Nov. 15, '98.—**98.** Travaux, Société Impériale des Naturalistes de St. Petersbourg.

The General Subject.—Anon. White wax of insects, **87**, Nov. 19.—Bethe, A. A comparative study of the functions of the central nervous system of Arthropods, transl. by W. W. Norman, Journal of Comparative Neurology, viii, 3, Granville, O., Nov., '98.—Cockerell, T. D. A. Entomological Ethics, **7**.—Distant, W. L. Biological suggestions: Assimilative colouration, ii, Zoologist, London, Nov., '98.—Doran, E. W. Vernacular names of insects, **7**.—Heymons, R. [Notice of] Packard's Text Book of Entomology, Zoologisches Centralblatt, Leipzig, Nov. [illegible], '98.—Knuth, P. Handbuch der Blütenbiologie. II Band: die bisher in Europa und im arktischen Gebiet gemachten blütenbiologischen Beobachtungen. 1. Teil: Ranunculaceae bis Compositae. Leipzig. Engelmann, 1898, 8vo, 210 figs.—Meunier, F. The insects of secondary times, 30 pls. Archives du Musée Teyler (2) vi, 2, Haarlem, '98.—Rane, F. W. Notes on the fertilization of muskmelons by insects, **7**.

Economic Entomology.—Anon. Flies and typhoid fever in American camps in [illegible], **87**, Nov. [illegible].—Anon. A new tobacco juice insecticide, Journal Société des Aviculteurs Française, Paris, Oct., '98.—Blandford, W. F. H. *Xyleborus morigerus*, figs., Gardener's Chronicle, London, Nov. 26, '98.—Britton, W. E. The San José scale in Connecticut, **7**.—Chittenden, F. H. Insect injury to millet, **7**.—Cooley, R. A. Notes on some Massachusetts Coccidæ, **7**.—Felt, E. P. Notes on some c the insects of the year in the State of New York, **7**.—Fernald, C. H. The brown-tail moth (*Euproctis chrysorrhœa*, L), **7**.—Forbush, E. H. Recent work of the Gipsy-moth Commission, **7**.—Grassi, B. Malaria propagated by means of special insects, Atti d. Reale Accademia dei Lincei, Rome, Nov. 6, '98 —Hopkins, A. D. Some notes on observations in West Virginia, **7**.—Howard, L. O. Two beneficial insects introduced from Europe, figs., **7**; Notes on house flies and mosquitoes, **7**; *Pulvinaria acericola*(W. & R.) and *P. innumerabilis*, Rathv., figs., **7**.—Johnson, W. G. Hydrocyanic acid gas as a remedy for the San José scale and other insects, **7**; Notes from Maryland on the principal injurious insects of the year, **7**.—Kanthack, A. A.; Durham, H. E., and Blandford, W. F. H. On nagana or tsetse fly disease. Report made to the Tsetse fly Committee of the Royal Society, of observations and experiments carried out from November, 1896, to August, 1898. Proceedings, Royal Society, lxiv, 404, London, Nov 19, '98.—Kenyon, F. C. Abstracts of recent publications, Experiment Station Record, x, 3, '98, **7**.—Marlatt, C. Proceedings of the tenth annual meeting of the Association of Economic Entomologists, Aug 19 and 20, 1898, **7**; Notes on insecticides, **7**.—Osborn, H. The duty of Economic Entomology, **7**.—Quaintance, A. L. A preliminary report upon the insect enemies of tobacco in Florida, figs., Bulletin 48, Florida Agric. Experiment Station, Deland, Fla., Oct., '98.—Sch, S. The tsetse-fly, Insekten Borse, Leipsic, Nov. 24, '98: A new means against phylloxera, Naturwissenschaftliche Wochenschrift, Berlin, Nov. 27, '98.—Smith, J. B. The distribution of the San José or pernicious scale in New Jersey, **7**.—Webster, F. M. The Chinch Bug: its probable origin and diffusion, its habits and development, natural checks and remedial and preventive measures, with mention of the habits of an allied European species, figs. Bulletin No. 15, new series, '98, **7** —Webster, F. M., and Mally, C. W. Insects of the year in Ohio, **7**.—Weed, C. M. The feeding habits of the chipping sparrow, figs. Bulletin 55, New Hampshire College Agric. Experiment Station, Durham, N. H., July, '98; Notes on tent-caterpillars, **7**.—Weed, C. M., and Fiske, W. F. Notes on pruce bark-beetles, **7**.

Arachnida.—Cambridge, O. P. Arachnida Araneidea, pl. xxx, **15**.—Schimkewitsch, W. Note on the dorsal organ of the Araneina, **98**, '97, 8, Dec.; On the origin of the alimentary canal in some Arachnids, **98**, '98, 1, Jan —Schultz, E. On regeneration of the feet of spiders, **98**, '98, 2. Feb.

Myriopoda.—Cook, O. F. American oniscoid Diplopoda of the order Merochaeta,* **50**, no. 1154.

Orthoptera.—Burr, M. Aquatic Orthoptera, Entomologists' Record London, Nov. 15, '98.—Hunter, S. J. On the occurrence of *Dissosteira longipennis*, Thomas, [and] *Dissosteira* in

Colorado, **5**.—Hunter, S. J. [and Hough, G. de N.] Parasitic influences on *Melanoplus*, figs. Kansas University Quarterly. vii (A), 4, Lawrence, Oct., '98.—Morse, A. P. Notes on New England Acridiidæ iv, Acridiidæ 5, **5**.—Pictet, A. and de Saussure, H.—Orthoptera,* pp 401-416, **15**.

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"THE BUTTERFLY BOOK. A Popular Guide to a Knowledge of the Butterflies of North America. By W. J. HOLLAND. Ph D., D.D., LL.D. With 48 plates in color photography. New York. Doubleday & McClure Co." This is a large octavo of 400 pages, and contains chapters on the Life-History and Anatomy of Butterflies: the Capture, Preparation and Preservation of Specimens; the Classification of Butterflies; Books about North American Butterflies. Through the work are interesting essays under the title of Digressions and Quotations. The plates represent the highest type of what is known as the three-color process and are successful to a remarkable degree. Where they are not quite satisfactory it is owing to the fact that the forms figured are so closely related as to make any process insufficient. The majority of the figures leave nothing to be desired, as they are close to perfection. The work is excellently done, and the author is to be sincerely congratulated. This book will do more to stimulate an interest in these insects than anything heretofore printed. The works of the past that were of any value had a prohibitive price, but on looking over this work one is amazed at what is given for such a comparatively small money outlay. The young and the old can find any amount of interest in such a book, and we can heartily recommend it to all lovers of the beautiful in Nature. It is intended as a popular work, but still has a scientific interest, as many types are accurately figured, and it will not be out of place in any scientific library. We can hardly say too much in its praise, and can find but few faults, and in a work of its magnitude it is surprising there are not more that might be criticised. On page 80 the caterpillar is spoken of as emerging from the chrysalis—a typographical error of small moment. The locality of *Argynnis hippolyta* is not given. Figures 14 and 15, on plate 46, represent as male and female two widely different species. Figure 39, on plate 47, is not *pocahontas*, but the normal female of *Pam. zabulon*. Ptate 47, fig 40 is not *brettus* but *phylæus*. Plate 48, fig. 15 is not *Thanaos horatius* ♂ but the ♀ of a different species. We think as a book for the tyro the time of seasonal appearance of the species should have been given. The author has slighted his descriptions on account of the perfection of the plates, but where sexes differ and under sides are not shown more descriptive matter would have been an advantage. If the specimens had been properly and symmetrically expanded, they would have looked much better to the eye of the lepidopterist. Our space is too limited to say more of this beautiful book. We hope it will find a place in every library. H. S.

THE BUTTERFLIES.

After Coppee. ' Pour la Couronne."

At sixteen years she knew no care;
  How could she, sweet and pure as light?
And there pursued her everywhere
  Butterflies all white.

A lover looked. She dropped her eyes,
  That glowed like pansies wet with dew.
And lo! there came from out the skies
  Butterflies all blue.

Before she guessed, her heart was gone;
  The tale of love was swiftly told.
And all about her wheeled and shone
  Butterflies of gold.

Then he forsook her one sad morn,
  She wept and sobbed, "O, love, come back."
There only came to her forlorn
  Butterflies all black.

JOHN DAVISON.

DOINGS OF SOCIETIES.

At the November meeting of the Feldman Collecting Social, held at the residence of Mr. H. W. Wenzel, 1523 South 13th street, eleven members were present. On behalf of Mr. Laurent, Mr. Wenzel exhibited a collection of Lepidoptera made by himself and Mr. E. Wenzel at North Mountain, Pa., in July, calling particular attention to *Endropia serrata*, which had been taken abundantly; also to *Plusia æreoides* and *P. u-aureum*, which were probably not before recorded from Pennsylvania. Among the unidentified material Dr. Skinner called attention to a specimen of the rare *Plusia formosa*.

Mr. H. Wenzel reported the capture of *Casnonia ludoviciana* and other interesting species of Coleoptera, in New Jersey, on October 12th. The same speaker referred to the forthcoming new edition of Smith's Catalogue of the Insects of New Jersey, and to the diversity of opinion of authorities as to the abundance or rarity of certain species in the old work, and suggested the advisability of having more consistent data in the new work. Discussed by Messrs. Johnson, Bland, Fox, H. Wenzel and Castle. Mr. Johnson spoke of the extension of the Carolinian fauna into New Jersey. He had collected ninety-seven species of Syrphidæ in that State, of which only ten were Southern species; of the Tachinidæ ninety-six species, of which twenty-seven may be said to be Southern. Five out of forty-eight species of Tabanidæ had not been recorded from so far north, while out of thirty-four species of Bombylidæ only six are Southern. He did not think the Diptera formed as good a basis for indicating faunal limits as did the Coleoptera or some of the other orders of insects. Mr. H. Wenzel exhibited a species of *Lixus*, from Anglesea, N. J., taken in August, which he had only before known from Louisiana. The absence of *Mantis carolina* from the fauna of Southern New Jersey was commented on by Mr. Seiss. Dr. Castle stated he had received specimens of the *Mantis* from Chester county, Pa.

WM. J. FOX, Secretary.

A meeting of the Entomological Section of the Academy of Natural Sciences was held November 17th, Mr. C. S. Welles, Director, presiding. Dr. Calvert stated that he had recently mounted some specimens of the San José scale (*Aspidiotus per-*

niciosus), and presented them for examination. He said the specimens fairly represented the figures in the current literature on the subject. The specimens had been boiled in a solution of caustic potash, which had removed all but the chitin. Twigs of apple, showing the scale in position, were also shown, as well as those of *Chionaspis furfurus*. Dr. Skinner exhibited a living specimen of *Ranatra fusca*, and also two species of *Erebia* from Northern Alaska. The latter were in poor condition and looked much alike, but, on careful examination, the differences were marked, the species being *E. rossii* and *E. disa* var. *mancinus*. The former seldom has but two ocelli and the latter three or four. *Mancinus* also has a small white spot on the middle of the edge of the band which crosses the centre of the under side of the inferiors. Mr. Liebeck exhibited an interesting conglomerate cocoon of *Callosamia cynthia*. Three well-made cocoons were enclosed in a bag of silk, the whole looking like one large pear-shaped cocoon. Dr. Skinner exhibited his new Synonymic Catalogue of American Rhopolocera. The body of the catalogue, exclusive of the index, bibliography, list of authors, etc., consists of ninety-nine pages. There are 645 species listed, and each reference is a separate line, thus greatly helping the eye. Where a species is found outside of our faunal limit the distribution is given. A few species listed as valid in former lists have been placed in the synonymy, but only in cases where it seemed well warranted. It is hoped the catalogue may prove useful.

Mr. Lancaster Thomas exhibited a female specimen of *Grapta comma*, captured at Cranberry, N. C., which was very dark on the under side. He had taken two specimens, one now being in the collection of Dr. Skinner. He also mentioned seeing *Callidryas eubule* flying in one direction, a specimen passing every five or ten minutes. He also saw *Junonia cœnia*, flying South, in the same way, in pairs. In both cases the butterflies were going against the wind. Mr. Johnson said he had seen *Pieris monuste* in immense numbers at St. Augustine, Fla., going North, for three days. Same speaker had seen *Agraulis vanillæ*, going South, in Florida, in September, when the passion-vine, their food plant, further North, was withering, but in Florida was still fresh.

HENRY SKINNER, M. D., Recorder.

A regular meeting was held by the Newark Entomological Society at Turn Hall, Sunday, December 11th, at 4 p. m., with President Scleckser in the chair and the following members present: Messrs. Angleman, Kircher, Broadwell, Seille, Herpers, Bischoff, Kemp, Bunsow, Weidt, Buchholz and Prof. John B. Smith.

The genus *Datana* was selected for study and identification for the following meeting.

Mr. Kemp gave a list of captures made in one locality, at Clementon, N. J., for three successive seasons, as follows: May 10, 1896, *Pamphila metea* ♂ was abundant; ♀ not so plentiful. Specimens were fresh. *Syneda graphica*, none seen. *Epirranthis obfirmaria*, none seen. May 9, 1897, *P. metea* ♂ abundant; ♀ more scarce than the preceding year. *S. graphica* very abundant; mostly in fresh condition. *E. obfirmaria*, none seen. May 10, 1898, *P. metea*, one ♂ taken; *S. graphica*, none seen; *E. obfirmaria*, abundant and in good condition, but difficult to capture on account of their keeping so close to the underbrush.

Mr. Weidt remarked that an early spring one season and a late one the following would make a difference of two or three weeks in the appearance of certain broods of insects.

Mr. Kemp mentioned that he found *Cincindela consentanea* moderately abundant on very warm days all through September, in 1897, at Atco, N. J.

Mr. Weidt remarked that he noticed ants preying on young larva of *Sphinx luscitiosa*, and he added that he seldom found eggs on bushes that were infested with ants.

The following officers were elected:

President, Edward Bischoff.

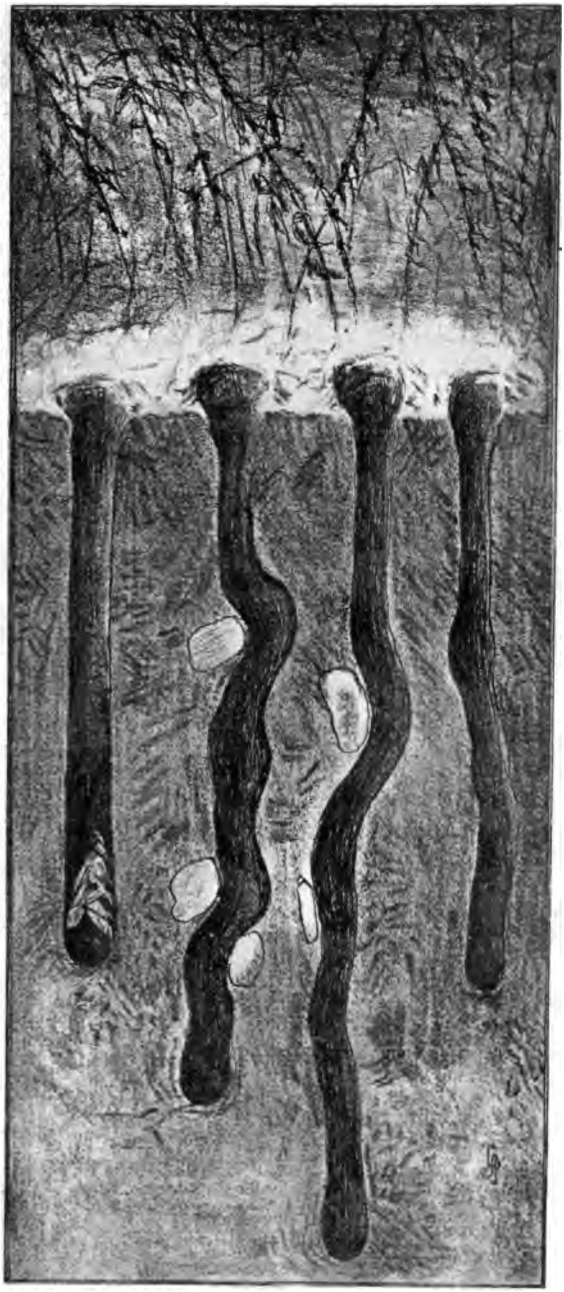
Vice President, S. T. Kemp.

Treasurer, Simon Seib (re-elected).

Secretary, A. J. Weidt (re-elected).

Librarian, John Angelman (re-elected).

Mr. Bischoff and Mr. Weidt volunteered to act as curators for Coleoptera and Lepidoptera, respectively, for the following year. A. J. WEIDT, Secretary.



Different forms of burrows of the Castle-building Spider.
a. occupied by Pompilus marginatus. Original.
From nature by the author.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

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THE CASTLE-BUILDING SPIDER.

By DR. J. L. HANCOCK.

Illustrations by the Author.

The sandy wastes bordering the lower end of Lake Michigan, in Northern Illinois, are inhabited by several species of tube-constructing spiders. Though any one of the forms occurring here would repay study, for the present I will consider a species which, from the peculiar habit of building a little castle or nest at the opening to the tube, makes it of more than ordinary interest. This Lycosid is likely to be taken at first glance for the turret-spiders L. *arenicola* or L. *turricola*, but it is quite distinct from either of them. The spider is equally expert whether engaged as a carpenter, weaver, mason or digger, all of which attributes she brings to bear some time or other in making her completed retreat. The female shown in the illustration, Fig. 1, is always found in the burrows when dug out of the ground, unless some mishap has overtaken her.

In the Fall of 1896 I found my way into an uncultivated lot where weeds in profusion had unbounded sway, cenchrus being particularly in evidence. Patches of high grass, sedges and ragweeds made the open lay of ground a paradise of running spiders. Here it was the castle-building species seemed perfectly at home, showing its varied accomplishments to best advantage. The artfully hidden castle is not apparent to the uninitiated while walking over the ground, as it is commonly secreted in a recess of overhanging dried grasses. Frequent visits to several localities added greatly to my observations, and, though the greater number were made in the late fall, at the suggestion of Mr. Emerton, some time was spent in June, in the following and present year, in anticipation of finding them mating. In this I was disappointed and all efforts to find the male was fruitless.

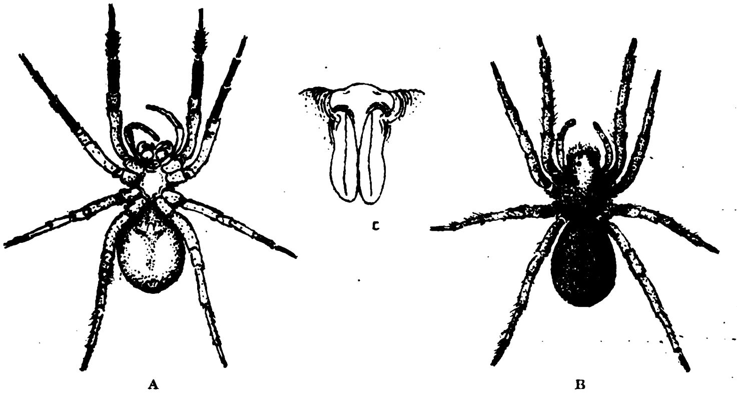


FIG. 1. (a) The Castle-building Spider, ventral view. (b) Same, dorsal surface. (c) Female epiginum. Original from nature.

One of the castles which I alluded to above, the first of my discoveries, will be described as a means of furnishing a general idea of the kind of nest made, afterwards recurring to the subject of castles further on, when considering the tubes throughout. When one remembers the average size of the adult castle, only five-eights of an inch high, and a little over one-half inch in diameter, it is obvious that close inspection is quite essential.

This castle was situated beside a half-buried piece of branch, a site which was chosen often. Around it was growing little seedlings and lichens which grew from the superficial deposit of vegetable mould, and giving to the surroundings the effect of a small garden colored with sienna and green. The nest proper was quite round; fragments of chickweed, bark and rootlets, woven together with silk, went to make up moest of the structure, while to one side a dried leaf of ragweed was æsthetically curved around and attached, leaving other bits of leaves incorporated into its margin. Two grass leaves were brought down from a plant near by and festooned to two sides, the finishing touch being a dagger-pointed bur poised on the margin. By the time several nests were examined I found evidence of the most whimsical tastes in the selection of material for nests, an enumeration of which is here given:

Green and dried grass leaves, dried fine sedges, spikes and leaves of foxtail grass, fibrous roots, ragweed leaves curved by drying, cenchrus or burgrass spikes and burs, wing of beetle, weather beaten white paper, piece of brown string, twigs of various kinds in bits, dark bark, seeds of weeds, bird excrement, sand made into pellets, small stones and gravel from soil.

Exploring the tubes with a straw was not without reward, for I found by feeling the way down carefully, until meeting resistance, the live spider when touched communicates a motion to the straw sticking above the ground. To learn more of the occupant one has but to dig a hole down at the side to avoid injuring the castle, then making an undercut below extending to the tube; follow it down to the bottom where the spider rests with its head pointing upwards. The Fall of the year finds various sized individuals of different ages preparing to pass the winter in burrows. Sometimes just within the castle a fine screen of silk is woven across the entrance as an obstruction against floods or the possible entering of hymenopterous enemies, which is again torn away after all danger is passed.

The young, even down to the smallest, show a wonderful instinct for castle building. This I saw depicted in the dainty character of many of their works. Activity is expressed on every side at this period of the year. Little yellow sand pellets encircling the openings told plainly that the spider's year is nearing a close. They had a forewarning of the coming winter and sought refuge by deepening their retreats to get safely below the freezing line. The love of warmth was exemplified even after the first fall of snow, for the appearance of the warm sun's rays enticed them to come up to get a last glimpse of the sun from the top of the castle. From what I gleaned, old spiders live in their burrows for more than a season and often remodel them after being injured by storms. They hold great fondness for their homes and try resolutely to stick by them, going out long enough only to catch insect food. Even this is seldom, for much food is taken in at the very thréshold of the castle. Younger specimens re-dig outgrown burrows, enlarging them as occasion requires. It was interesting to observe neighborly beetles and other species of spiders, not to be outdone, with one accord churn up the soil by their diggings.

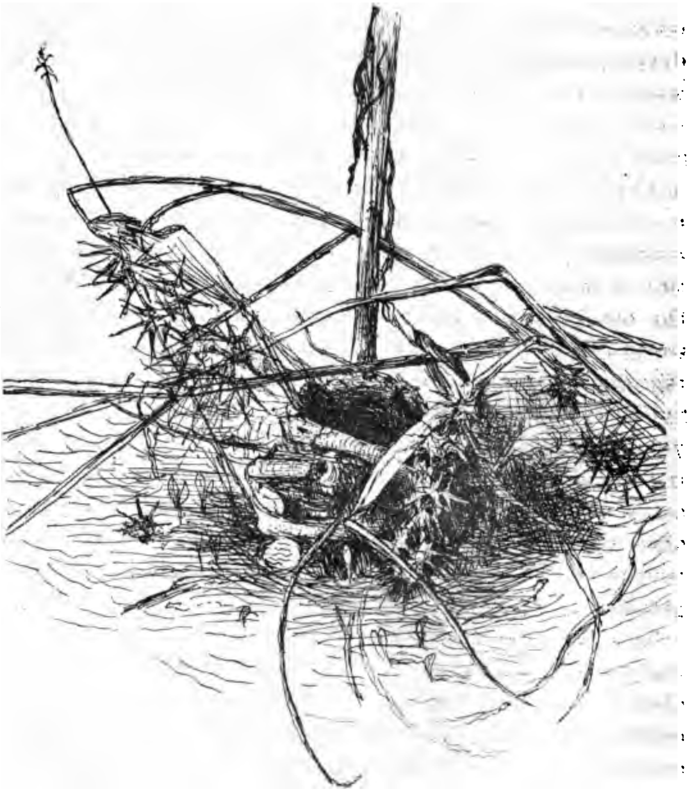


FIG. 2. A castle or nest of the Castle-building Spider. natural size. from nature, by the author.

When the vernal spell is changed by lowering temperature, quiet creeps upon the scene. Usually the spider's tube is constructed vertically in the ground unless, as is shown in the reduced plate illustration, obstructions cause some deviation. The four different examples here shown were opened from the side, being careful to preserve their form. A silk lining is put on by the spider, which is continuous with the inside of the castle. In the construction of the tube damp earth facilitates working materially, but being equal to the occasion the spider can dig a tube in dry sand, requiring extra effort and a good deal of ingenuity. The process is so simple, however, when compared with the complicated mechanism used by one contemplating sinking such a shaft on a large scale that it is worthy of special note. In setting out to make the tube she proceeds with some slight variation in the following way: Standing on tiptoe the spider moves her abdomen around almost in a circle between her legs, touching the ground here and there with the spinnerettes at the end of the body. The silk pouring out catches fast in the soil, and in a moment an adherent round flooring of about ten millimeters across is formed. Then she turns about, digging up the little silk mat entangled with sand, and in a twinkling has made it into a parcel, which is laid to one side. Again she spins out silk over the same spot and dexterously lifts up the mass, lays the pellet beside the preceding, until by repetitions she has temporarily encircled the newly-made pit with her internal diggings. At times she stands head down in the hole and pats down the new-formed mouth with her inverted abdomen. Within an hour she is down the depth of her body and the hole excavated sufficiently large to turn around in, but now each parcel after being made is snapped from her mandibles with a sudden motion of the palpi when up to the entrance. As she progresses the tube is lined with silk, often going over the surface to prevent any caving in of the earth. Now we find her taking a well-earned rest, and not until darkness is fully established does she commence her castle. In vivarium I watched spiders by artificial light under conditions quite natural. Coming out of her tube I saw her grasp a prickly sphere of burgrass, and taking it to the burrow she adjusted it to the border of the opening. In a few moments she gathered two more of the burs, one at a time placing them to form a partial border; the intervening spaces between them were filled with sand pellets, which she made and brought up from the inside of the tube. Taking this to be the foundation of her future castle, I took the opportunity of trying an experiment, that is, of furnishing material. The ground, quite bare near her tube, was strewn with a selection of short pieces of bleached grasses, the top of a foxtail grass, which I had seen composing other nests, beside some weed stems, and three little rolled pieces of red, white and blue paper. The spider, which had disappeared for a time below the surface, now came to the opening, and walking over to one of the grasses she picked it up and carried it to the edge, where, letting it go, she turned around within the tube and attached it at the middle to the entrance with multiple strands of silk. Another grass stem was next taken, which she laid crossing the first, on top of the half buried burs. Then her attention was drawn to the weed stems, which in like manner were disposed of and imbedded in silken pellets. In their turn then came the red paper, a straw and sand bundle, placing them with the same scrupulous neatness. The bit of white paper was drawn to the side and fastened, and lastly the blue paper found a resting spot, all the material which I supplied having been used in embellishing the towering castle, which was now nearly an inch in height. Referring again to the plate illustration, *a*, shows a tube which penetrated ten inches of the soil; it was finished with a curious castle, having as an ornamentation on top two spikes of the bristly foxtail grass. The interior was slightly enlarged just within. A slight difference is shown in the tube *b*, the work of a larger spider with somewhat faded abdomen. As is often the case in old specimens, she had not exercised all her latent talents, for a few bits of twigs and a dilapidated leaf constituted her castle, scarcely raised above the ground. Quite a contrast is presented by the tube *c*, made by a younger individual. Her artistic culture was more freely displayed in an excellently built castle, which I have drawn as a separate illustration, Fig. 2. Surprising industry is shown in the length of the tube, nearly two feet. As if fortified against invasion the castle was adorned with a spike of nine prickly heads of burgrass; beside the side of the passage was also placed a cluster of burs almost touching the entrance.

At the margin a small twig was set on transversely, serving as a little stepping pillar on which the spider chose to climb in getting in and out. The tube *d* has the middle slightly enlarged, showing the ending of what was formerly the Summer quarters, while now it is continued down as a Fall or Winter extension. The spider found in the bottom of this cellar was fully grown, measuring nearly three-quarters of an inch in length. Several castles are sometimes found naturally grouped near together, within a radius of twenty feet or thereabouts, but the tube last mentioned was isolated in a lonely field. The castle presented no special interest and will be passed over without further comment. It will be seen that the castle builder, unlike the known turret spiders, rarely builds the nest in a strictly pentagonal form, as has been frequently observed; for instance, in *Lycosa arenicola*. In the gradation between the young and older spiders' nests there is the widest diversity. Young specimens not infrequently build a perfect little tower, almost entirely of stones, and one I have in mind had nine such particles made into a compact edifice five millimeters high. The masonry was exquisitely put up, every stone bearing out true proportions, about the central opening of four millimeters diamefer. Silk used as cement held the whole together securely.

I once saw a reflection of sombre forebodings when exposing an immature spider's tube; the light fell into the palatial cellar only to find it changed into a chamber of horrors, for instead of the spider a black insect like a nervous villain commenced jerking her wings of mourning like one in secret hiding bent on some treacherous mission. An orange spot on the upper part of her body, together with other markings, told the species, *Pompilus marginatus*.

Pompilus is figured in the plate illustration *a*, and from her position the inference may easily be imagined. When teased with a straw so her patience is sorely tried, the castle builder will stand her ground in self-defense and present as formidable a picture as can be supposed. She instantly responds to such threats with open jaws, at the same time raising up the two front pairs of legs high in the air. In this attitude she favors the conspicuous display of black under the outer three joints of the extremities, which in repose is not shown.

I succeeded in keeping specimens alive several years and discovered quite a number of interesting traits during this acquaintance well worth the care bestowed on them. Reserving the technical description for a separate article, I may add finally that the name *Lycosa domifex* is given to the species, whereby it may be known hereafter in scientific nomenclature.

THE PSYCHODIDAE OF THE PACIFIC COAST.

By TREVOR KINCAID, University of Washington.

Through the kindness of the Rev. A. E. Eaton, the British authority on the Psychodidæ, the writer has been made acquainted with the classification of the family as accepted by European students. In Europe there are five genera, which are tabulated by Halliday in the following manner:

- (a) With two simple nervures between the forked veins
  - (b) Proboscis compressed, with maxillæ nearly as long. Wings pointed exactly at the end of the second simple vein. *Psychoda.*
  - (bb) Proboscis with broad, pointing liplets. Maxillæ obsolete. Labrum shorter than the labium.
    - (c) Wings broad, ovate, with an upward bellying sinus in the middle in the male. *Ulomyia.*
    - (cc) Wings even in both sexes. *Pericoma.*
- (aa) With one simple nervure between the forked veins.
  - (b) Hindermost vein not much shorter than the rest. Antennæ, with obconical joints, 14-jointed. *Trichomyia.*
  - (bb) Hindermost vein abbreviated. Antennæ, with linear joints, 15-jointed. *Sycorax.*

To these five genera, a sixth, *Phlebotomus*, has been added. This genus seems to be more or less intermediate between Halliday's primary divisions of the family, since Mr. Eaton states that it has two simple veins between the forked nervures, but is otherwise more closely related to *Sycorax* and *Trychomyia*.

Mr. Eaton records forty-one species of PSYCHODIDÆ for the British Islands, distributed as follows: *Ulomyia* (1 sp.); *Pericoma* (32 sp.): *Psychoda* (6 sp.); *Trichomyia* (1 sp.); *Sycorax* (1 sp).

All of the North American PSYCHODIDÆ so far described have been placed under the genus *Psychoda*, but there is little doubt that part of these will be referred to *Pericoma*.

It is the purpose of the present paper to describe a number of new species of PSYCHODIDÆ from various points on the Pacific coast and to record certain notes in connection with species previously described. In the discrimination of the species in the group very little use has apparently been made of the ventral plate of the female. The writer believes that this structure is of great importance in this connection.

Psychoda pacifica Kincaid. Ent. News, VIII, 6.

This species, originally described from Seattle, seems to range along the whole Pacific coast, since representatives have been examined from Alaska, Oregon, eastern Washington and California, which, although varying in some respects from the type specimens, seem to be specifically the same. The Alaska specimens were secured by the writer during the summer of 1898 at Sitka, Unalaska and the Pribilof Islands in Bering Sea. The variety found upon the Pribilofs differs considerably from the type form. They are on the average much smaller than the latter; the antennæ are 14-jointed, owing to the absence of one of the small terminal articles, and the inferior appendages of the male genitalia are much more strongly curved towards the tip. The Unalaskan and Sitkan examples resemble the types quite closely, about the only difference being that the wings are more acutely pointed than is usual in the latter. The Oregon specimens were taken at Corvallis, Oregon, during the month of June, 1898, while the Californian examples were included in a collection of Psychodidæ sent to the writer through the courtesy of Mr. R. E. Snodgrass from the Leland Stanford Junior University. From Professor Charles V. Piper, of the Washington Agricultural College, four specimens of *P. pacifica* were recently obtained, which were collected at Pullman, Washington, the specimens being dated from July 12 to July 27, 1898.

Psychoda olympia Kincaid. Ent. News, VIII, 6.

This is a *Pericoma*. The posterior bifurcation is much nearer the base of the wing than is the anterior one; the wing is pointed exactly at the tip of the first simple vein.

Psychoda sigma, n. sp.

♀ Body yellowish white, clothed with cream-colored hair; wings ovate, apex obtusely rounded, more than twice as long as broad, clothed with cream-colored hair upon the veins, except an indistinct S-shaped band of black across the middle; fringe quite dense and long, cream-colored, except two patches of black at the anterior and posterior terminations of the S-shaped discal band; length of wing 2.5 mm. Legs yellowish white, clothed with cream-colored hair and scales. Antennæ longer than the width of the wing, 14-jointed, with verticillate whorls of cream colored hair upon the nodes; joints 1-2 small, closely united; joints 3-13 globular, separated by slender pedicles; joint 14 minute. Ventral plate yellowish, very narrow at base, broadening towards the apex, which is produced in two divergent lobes; ovipositor yellow, short, almost straight.

♂ Smaller than ♀, with the black band upon the wings less clearly evident, Genitalia conspicuous, brown, clothed with long cream-colored hair. Inferior appendages 3-jointed; joint 1 stout, cylindrical; joint 2 twice as long as 1, slender, slightly swollen at base, curving upwards; joint 3 very slender, cylindrical tapering at apex.

Superior appendages not as long as basal joint of inferior; 2 jointed; joint 1 short; joint 2 tapering to an acute point.

Habitat: Olympia, Washington. June 24 to July 1, 1897. Many specimens were collected on a wall shaded by hop vines.

Psychoda schizura, n sp.

♀ Body whitish, clothed with gray hair on the thorax and silvery white on the abdomen. Legs whitish, becoming darker basally, clothed with white hairs and scales. Wing a little more than twice as long as broad, rather acutely pointed at the apex; hair upon the veins white and black, distributed in alternate patches, so as to give the surface of the wings a mottled appearance; well marked patches of black at the apices of the veins: fringe on posterior margin gray; length of wing 2.7 mm. Antennæ not as long as the width of wing, 15 jointed; basal joints not much larger than succeeding ones: joints 3-15 globular, separated by slender pedicles, which are about as long as the length of the nodes, each joint bearing a verticillate tuft of white hair. Ventral plate V shaped; ovipositor short.

♂ Smaller than ♀. Inferior appendages extremely long, 3-jointed: joint 1 stout, cylindrical; joint 2 almost twice as long as 1, enlarged at the base and tapering to the apex; joint 3 minute, clavate. Superior appendages as long as first joint of inferior, two jointed, tapering to an acute point,

Habitat: Seattle, Wash., August 13 to September 1, 1898. On windows.

Pericoma tridactila, n. sp.

♀ Body light brown, densely clothed with gray hair. Wings ovate, one and one half times as long as broad, apex moderately acute, clothed over the whole surface with gray hair, except an irregular band of white across the middle; fringe with basal third gray, remainder white, as long as the width of three cells; length of wing 2.5 mm. Legs light brown, clothed with gray hair and scales. Attennæ as long as the width of the wing, 16-jointed, with dense whorls of gray hair upon the nodes; joint 1-2 not larger than succeeding joints; joints 3-15 globular, separated by slender pedicles, which are slightly longer than the length of the nodes; joints 14-16 minutely, closely apposed. Ventral plate longer than broad, sides not emarginate, narrowing strongly towards the apex, which is bilobate.

♂ Genitalia conspicuous, clothed with gray hairs Inferior appendages elongate, 2-jointed; basal joints stout, cylindrical, fused in the median line; second joint as long as first, straight, cylindrical, tapering to a rounded apex, and bearing at the tip three divergent, slender clavate processes, which are almost as long as the second joint itself Superior appendages half as long as inferior, 2-jointed; joint 1 cylindrical, stout: joint 2 as long as first, slender, tapering to an acute point.

Habitat: Seattle, Washington, March 24 to June 15, 1898. Captured on a basement window.

In this species the bifurcations of the veins are so obscurely indicated that it was difficult to place generically; the anterior bifurcation is very close to the apex of the wing and the posterior one quite close to the base. The wings are folded roof-like in repose.

Pericoma sitchana, n. sp.

♂ Body black, clothed with gray hair. Legs black, clothed with gray hair and scales. Wings ovate, broadly rounded at the tip, the first simple nervure terminating just before the apex; biturcations equidistant from the base of the wing; hair upon the veins mixed black and white, the black being most pronounced at the apices of the veins and at the bifurcations; length of wing 2.5 mm.; fringe gray, with a patch of white at the apex. Antennæ one-half as long as the width of the wing, 16-jointed; joint 1 cylindrical; joint 2 large, globular; joints 5-16 globular, separated by very short pedicels, the nodes sparsely clothed with gray hair. Gentalia not conspicuous, black, clothed with gray hair.

Habitat: Sitka, Alaska, July 12, 1897.

Pericoma triloba, n. sp.

♀ Body brown, densely clothed with gray hair. Wings broadly ovate, not quite twice as long as broad, apex distinctly pointed, exactly at end of first simple nervure, clothed with gray hair upon the veins; fringe dark gray; length of wing 3 mm.; posterior bifurcation much nearer the base of the wing than the anterior one. Legs brown, clothed with gray hair and scales. Antennæ one-half as long as the width of the wing, not much longer than the maxillary palpi; 17-jointed; joint 1 moderately large; joint 2 extremely large, subglobose towards apex, clothed with scattered whorls of long gray hair; joint 17 minute. Ventral plate broad at base emarginate laterally and terminating in three distinct lobes; ovipositor yellow, slightly curved.

♂ Gentalia inconspicuous, very hairy. Inferior appendages 2-jointed; joint 1 large and stout; joint 2 short, cylindrical, curving towards the apex, which is broadly and obliquely truncate. Superior appendages 1-jointed, short, straight, tapering from the base to an acute point.

Habitat: Seattle, Washington. Numerous specimens were secured in a railroad culvert situated on the campus of the university, March 12 to June 1, 1898.

Pericoma variegata, n sp.

♀ Body black, clothed with white hair, except a small patch of black hair near the base of the wing. Legs black, clothed with black and white hair. Wings rather acutely rounded at the tip, more than twice as long as broad: hair upon the veins deep black, except upon a broad transverse band near the base and an outwardly curved row of small patches just beyond the middle. which are white; fringe both on anterior and posterior margin. with alternate patches of white and black hair; length of wing 2.8 mm. Antennæ black, as long as the width of the wing, 17-joints; joints 1-3 stout, cylindrical, densely hairy; joints 4-17 small, fusiform, thinly clothed with long white hair. Ventral plate brown, shallowly emarginate at apex: ovipositor brown, rather long, almost straight.

Habitat: Seattle, Wash. Swept from bushes May 8, 1898.

Pericoma bipunctata, n. sp

♀ Body brown, clothed with white hair. Legs brown, clothed with white hair, some of the latter being long. Wings broadly rounded at the tip, about twice as long as broad, clothed upon the veins with white and black hair, the black most pronounced at the apices of the veins and upon the bifurcations, the white most evident near the base and towards the apex, where there are small, irregular patches of this color; fringe black, except a spot extending from the apex of the third longitudinal vein to the end of the seventh and a small patch between the eighth and ninth vein, which are white; bifurcations equidistant from the base of the wing; 17-jointed; joint 1 rather large, cylindrical; joint 2 broader than 1, globular; joints 3-17 fusiform, clothed with scattered white hairs; joints 3-4 bear dorsally a row of strong erect black setæ. Ventral plate squarely produced, slightly emarginate at apex.

♂ Gentalia conspicuous, black, clothed with white hair.

Habitat: Seattle, Wash. (1♂); Santa Cruz Mountains, Cal. (1♂; 1♀); from the collection of Leland Stanford Junior University.

Pericoma furcata, n. sp.

♀ Body brown, clothed with white hair, among which a few black hairs are scattered. Wing twice as long as broad, narrowly rounded at the apex, which is pointed between the simple veins; viens clothed with black and white hairs as follows: Two curved rows of prominent black tufts across the middle of the wing, between which the hair is principally white; the area between the outer row of black tufts and the apex of the wing principally with black hair · area between the inner row of black tufts and base of wing, with mixed black and white hair: fringe black, with white tufts at apices of all the veins; bifurcations equidistant from the base of the wing: length of wing 2.8 mm. Antennæ as long as the width of the wing, 16-jointed; joints 1-2 slightly larger than the succeeding ones; joints 3-16 swollen at base and bearing loose tufts of black hair. Legs with alternate annulations of black and white hair. Ventral plate dilated basally, and strongly produced in the middle. the production bilobed and angularly emarginate at apex; ovipositor moderately long, almost straight.

Habitat: Pullman, Wash. Collected by Mr. R. W. Doane, of the Washington Agricultural College,

Pericoma truncata, n. sp.

♀ Body brown, densely clothed with mixed white and dark brown hair. Wings ovate, broadly rounded at the tip, not quite twice as long as broad; hair upon the veins principally dark brown. with a rather large patch of white near the middle of the wing and its apex; fringe dark brown, on posterior margin as long as the width of three cells and with small patches of white hair alternating with the brown tufts at the apices of the veins; bifurcations of the veins equidistant from the base of the wing; length of wing 4 mm. Legs brown, clothed with brown hair and scales, interspersed with a few longer white hairs. Antennæ black, not quite as long as the width of the wing, 17-jointed; joint 1 rather large, cylindrical; joint 2 large, globose; joints 3-16 fusiform, covered with scattered hairs; joint 17 minute; ventral plate longer than broad, broadly truncate at the apex: ovipositor yellow, long and slender, strongly curved.

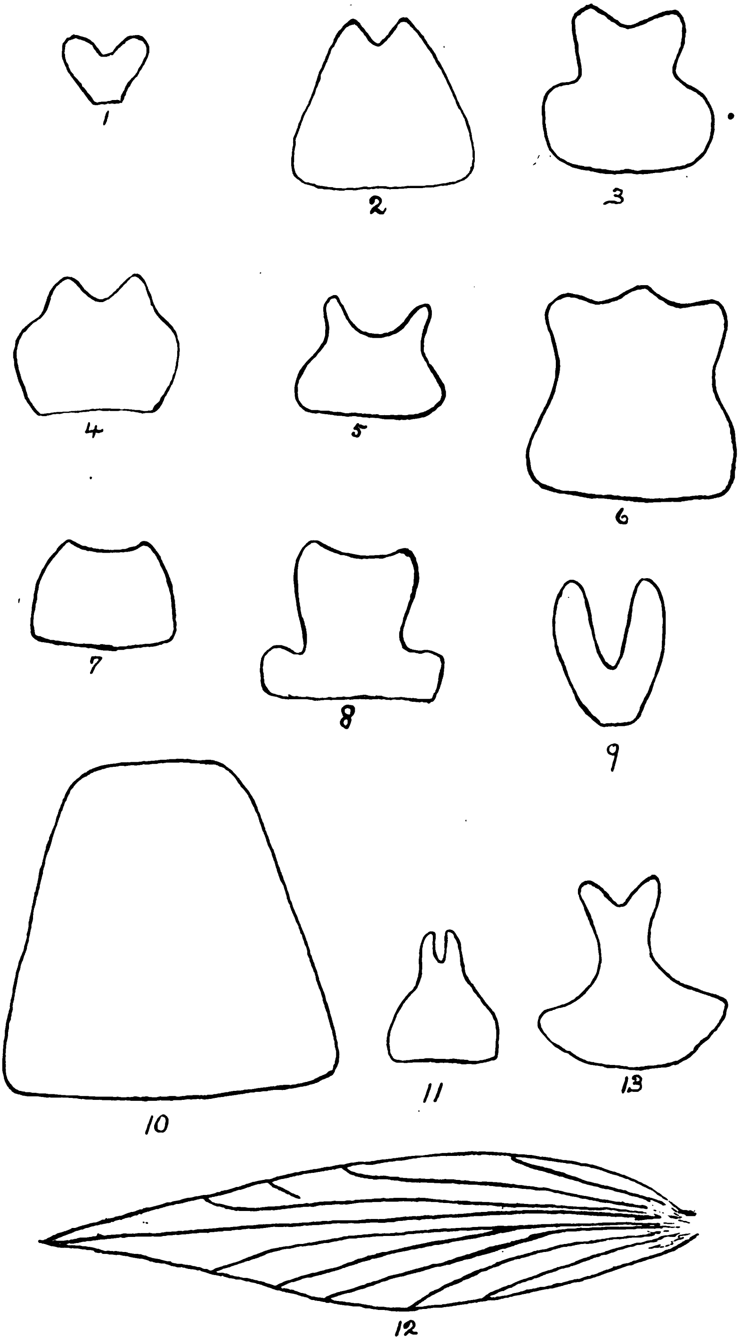
Habitat: Palo Alto, Cal. From the collection of the Leland Stanford Junior University. Collected by Mr. R. E. Snodgrass.

Sycorax lanceolata, n. sp.

♀ Body brown, clothed with brown hair, which appears black in some lights. Wings extremely narrow, four times as long as broad, apex sharply acuminate and pointed exactly at the tip of the single simple nervure; anterior and posterior bifurcations distant from the base of the wing, respectively, two-thirds and one-third the wing's length; veins unevenly clothed with brown hair, similar to that upon the body; fringe very heavy, colored similarly to the hair upon the veins, on the posterior margin somewhat shorter; length of wing 2 mm. Legs brown, clothed with brown hair, except on the basal joints of all the tarsi, which are covered with white hair Antennæ short, stout, about three-fourths as long as the width of the wing, 15-jointed; joint 1 cylindrical; joint 2 globose, larger than succeeding joints; joints 3-15 linear and sparsely clothed with brown hair. Ventral plate elongate, broad at the base, and narrowed towards the apex, which is bilobed and linearly emarginate.

Habitat: Palo Alto, Cal. August 3, 1898. One specimen; Santa Cruz Mountains. August 9, 1895. Three specimens; collection of the Leland Stanford Junior University. Almota, Wash. Ten specimens, collected by Mr. R. W. Doane, of the Washington Agricultural College.

This interesting species belongs to Halliday's second division of the Psychodidæ, containing genera with a single simple



THE PSYCHODIDÆ OF THE PACIFIC COAST.

vein between the forked nervures, and since it agrees in every essential generic character with Sycorax it has been referred to that group, although a comparison with the European material may necessitate the erection of a new genus for its reception.

EXPLANATION OF PLATE.

Figs. 1–11. Ventral plate of Psychodidæ. (1.) *Psychoda sigma*, n. sp. (2.) *Pericoma tridactyla*, n. sp. (3.) *Pericoma olympia* Kinc. (4.) *Psychoda pacifica* Kinc. (5.) *Psychoda elegans* Kinc. (6.) *Pericoma triloba*, n. sp. (7.) *Pericoma variegata*, n. sp. (8.) *Pericoma bipunctata*, n. sp. (9.) *Pericoma schizura*, n. sp. (10.) *Pericoma truncata*, n. sp. (11.) *Sycorax lanceolata*, n. sp. Fig. (12.) Wing of *Sycorax lanceolata*, denuded of hair to show venation. (13.) Ventral plate of *Pericoma furcata*, n. sp.

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ON TWO NEW AND ONE PREVIOUSLY KNOWN FLEA.

By C. F. Baker, Auburn, Ala.

Pulex howardii Baker. In the group which includes this flea and *fasciatus* and its allies, the males determine the species. For this reason *wickhami* and *gilletei* are not well founded. They were separated on characters whose values could not have been correctly estimated at the time. They should be reduced to synonyms of *howardii*.

Pulex irritans, var. **dugesii,** n. var.

Dr. Duges has sent me a flea taken on *Spermophilus macrourus* at Guanajuato, Mex., which agrees very closely in its characters with *P. irritans*, but is smaller, paler and the legs are more slender. In these particulars it approaches *pallidus*, but the male claspers are large and half oval, and the mandibles about equal the fore coxæ. Named for its discoverer, who has been diligently investigating the Mexican Siphonaptera for many years.

Hystrichopsylla americana, n. sp.

♀ Length 3.25 mm. A typical *Hystrichopsylla*, and closely resembling *obtusiceps*. Color deep chestnut brown. Head not angulated in front above, but evenly rounded from occiput to mouth. Head comb not perpendicular, as in *obtusiceps*, but on lower margin of head, and consisting of fourteen spines on each side. Pronotal comb of about fifty small, slender, close-set teeth. First abdominal segment only with a comb of about forty teeth. Abdomen very heavily bristled, as in *obtusiceps*. Seventh dorsal segment with ten large, very long, black spines on posterior border, which surpass apex of abdomen. Bristles on joint 2 of antennæ exceeding joint 3 in length. All tibiæ heavily armed on posterior margins with very numerous, long, stout, black spines. Tarsi slender; proportional lengths of tarsal joints as in *obtusiceps*. The posterior apical spines on hind tibiæ and first and second joints of hind tarsi are in each case longer than the succeeding joint.

Described from a single female received from Prof. F. L. Harvey and taken on *Evotomys* at Orono, Me. The specimen may not be quite mature.

I have seen a flea from *Haplodon* of remarkable structure and great size, which may have been an *Hystrichopsylla*. The single specimen which came into my hands was destroyed by an accident in the laboratory.

The occurrence of this peculiar genus in America is a matter of the greatest interest. The fact of its coming from an animal that has lived beside walks trodden by our entomologists for many years shows how the Siphonaptera have been neglected, and indicates the fertility of a field easily worked. An opportunity for a piece of splendid work is open to collectors of mammals and those interested in hunting. Such persons could easily do more than any others towards building up our knowledge of the Siphonaptera of America, and that by simply saving what actually passes through their hands. The only apparatus needed is small vials of alcohol and tweezers. It should be borne in mind that all species should be collected in *large* series, and everything must be carefully labeled.

A NEW CONOCEPHALUS.

By Lawrence Bruner.

Conocephalus atlanticus n. sp.

Grass green, very rarely flecked with dusky spots, moderately slender, with rather short wings and long ovipositor.

Fastigium of the vertex short, a trifle longer than broad, rounded in front and furnished below with a blunt tooth at base. It is bordered above at sides and in front by a yellowish line, below which it is more or less heavily marked in front by a transverse line of black. Pronotum usually with lateral carinæ yellowish, the disk flattened, quite coarsely punctate and granulate; the lateral lobes with anterior and posterior angles rounded. Tegmina extending beyond the apex of the hind femora from one-fifth to one-third their length, their tips acuminately rounded. Femora of front and middle legs below with 0-3 spines, those of hind legs with spines on both sides. Tibiæ of all more or less infuscated. Ovipositor rather long and slender, as long or longer than the body, a little curved near the base. Antennæ rufous, becoming infuscated apically.

Length of body, male, 24-27 mm., female, 26-28 mm.; of fastigium, male, 1.4 mm., female. 1.6 mm.; of pronotum, male, 7.2 mm., female, 6.7-7 mm.; of tegmina, male, 33 mm., female, 28-36 mm.; of hind femora, male, 19 mm., female, 19-21 mm.; of ovipositor, 29.5-31 mm.

HABITAT.—New Jersey, Philadelphia neck, Pa. (J. B. Smith); Maryland, Virginia (Bruner); Virginia (Pergande).

This insect approaches the *C. gladiator* Redtenbacher in the length of its ovipositor and wings, but differs from it in other respects. It is too small for *C. dissimilis* Serv. and has to short hind legs to be placed with C. retusus Scudder, while *C. obtusus* Burmeister seems to be an insect with a much shorter ovipositor. Described from 14 specimens.

PHYSIOLOGICAL SPECIES AGAIN.

JOHN H. LOVELL, Waldoboro, Maine.

In an editorial in THE NEWS for November, 1897, the editor tells of a strange tune sung (?) by a Cicada along the Jersey shore, and raises the query: "Is there such a thing as physiological species?" In the December number Prof. Cockerell expresses his belief in such species and advises naturalists to be on the watch for them, while in the succeeding issue Mr. Robertson asks why the term physiological species is used and requests examples.

Let us broaden the question to include all animal and plant life, and ask: "Do systematists ever constitute species on physiological characters alone?" Unquestionably they do and numerous instances can readily be given. Prof. Farlow, than whom we can have no better authority, says in his recent article on "The Conception of Species": "We cannot fail to notice the increasing tendency among cryptogamic botanists to give more and more weight to physiological characters in limiting their species." "One who takes up the recent descriptive works on Uredinaceæ is surprised to see the number of species which depend on physiological characters." "The tendency to split up species on physiological grounds becomes more and more marked." "The explanation is to be sought in the fact that descriptive botany in certain groups of plants has reached a point where the ordinary morphological characters no longer suffice to classify what we know or wish to know about the plants themselves." "We also feel warranted in believing that hereafter physiological characters will assume even a greater importance than at present in the characterization of species."

Anyone who is familiar with the systematic literature of botany knows how difficult it is to distinguish species even among the higher forms of plants on morphological grounds alone. The varieties of one botanist are apt to become the species of another; while both species and genera are transferred back and forth in a most astonishing manner. Dr. Gray once expressed the opinion that not more than one-third of the described species of oak were valid, and in one of his letters writes that the asters threatened to reduce him to blank despair. A well known authority in reviewing a recent work on grasses declares that six or eight good and valid species have been compressed into a single polymorphous one. The fact is that if minute differences were to be noted every plant would represent a species. Something like this seems really to have happened in the case of the genus Sphagnum in regard to which a European bryologist remarks, *Sit brevius dictum*; "*Tot specimina, quot nomina.*"

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MISCOPHINUS OR HYPOMISCOPHUS?—It turns out that *Miscophinus* Ashm., ENTOMOLOGICAL NEWS, October, 1898, is identical with *Hypomiscophus*, Ckll., Ann. Mag. Nat. Hist., October, 1898. Dr. Skinner cannot find out just when the October ENTOMOLOGICAL NEWS appeared, but he states that it "is usually mailed on or before the last day of each month." Messrs. Taylor and Francis inform me that the October Annals and Mag. of Nat. Hist. was issued to the public on September 30th, at 8.30 a. m., which would be about 3.30 a. m. in Philadelphia. Such are the facts, and they leave us still in uncertainty. Unless more light is forthcoming, I am inclined to favor the use of *Miscophinus*, as Ashmead described three species under it, while my *Hypomiscophus* was based on a single species.—T. D. A. COCKERELL.

P. S.—Mr. Ashmead kindly informs me that his copy of ENTOMOLOGICAL NEWS containing *Miscophinus* was received on the morning of the first of the month, and he read it at the breakfast table. It must therefore have been mailed on September 30th, and owing to the difference of longitude, the London publication has priority of several hours.—T. D. A. C.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer for each number three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., FEBRUARY, 1899.

SOME time ago an appeal for assistance to advance the interests of entomology was asked from a very wealthy woman in this city, and such assistance declined, on the ground that "she had never wavered from a dislike to amateur collections of insects immolated on pins and whose long suffering no one could realize." Now this all raises the question as to whether the lady is correct in her ideas on the subject. Even if entomologists did immolate live insects on pins, it is probable that they would not suffer pain, but as a matter of fact they are killed before being pinned, as otherwise they would be ruined as specimens. While insects do have sensory nerves, they are probably by no means as well developed as the motor nerves, which are essential in such active creatures. In the higher orders of animals and those which bring forth few young, pain is necessary to protect life, and the loss of this protection in insects is compensated for by fecundity. There are also direct experiments to prove that insects do not suffer pain. It is said that a dragon-fly will eat from the end of its abdomen as far as it may be fed to it. Also if the same insect be deprived of its abdomen and supplied with one of wax of the same size and weight, the insect will go about its business and pursue mosquitos for food as though its anatomy had not been abbreviated. The nocturnal moths are also very tolerant of pins thrust through them in day time, but when night comes they endeavor to depart, pin, tree and all, if pinned to the latter. The writer has been accused of cruelty by lady friends in starving to death the large bombycid moths, which by the way, have no mouth parts and only feed in the larvæ condition. When our lady friends cease to wear sealskin coats, the plumage of beautiful birds and have the tails of their horses less like effete dust brushes, we will be willing to hear from them on the subject of cruelty to insects.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

NOTICE.—Will correspondents kindly note that my address is now MESILLA PARK, New Mexico (Not Mesilla nor Las Cruces)?—T. D. A. COCKERELL.

"THE regents of the University of New York have appointed Dr. Ephraim Porter Felt, State Entomologist. In the autumn of 1896 he was appointed Assistant State Entomologist under the late Dr. Lintner. The tenth to the twelfth Reports of the State Entomologist were issued after his connection with the office."

ADMIRAL DEWEY, it seems, is a great collector of butterflies, in addition Spanish vessels and other bric-a-brac.—*Philadelphia Ledger.*

Remark.—If Admiral Dewey handles his specimens the way he did the Spanish fleet, he would not receive much in exchange for his duplicates. However, we are pleased to learn that he is an entomologist.—EDS.

A NOTE ON COPULATION AMONG ODONATA —The statement that in pairing the male dragonfly grasps the female by the prothorax or neck seems to have been generally accepted While this is true for Agrionidæ, so far as I have had opportunity of observing, it is possibly not true for Æschnidæ and Libellulidæ—certainly not true for all of them. During July, 1898, while collecting about Round Lake, in Northern Indiana, a pair of *Celithemis fasciata* was taken, and the male was found to be grasping the female *by the head*, the inferior appendage covering the occiput, while the superior appendages rested against the rear of the head. In this case I held the pair in my fingers and separated the male from the female. Although unable to make so positive an observation in any other case, by carefully approaching pairs of *Celithemis elisa*, *C. eponina* and *Mesothemis simplicicollis*, as they rested on the grass and sedges, I was able to determine, in the case of these three species also, that the female was grasped by the head, The structure of the parts involved might indicate that this habit belongs to all the Æschnidæ and Libellulidæ.*

A comparison of the actions of *Enallagma signatum* and *Celithemis fasciata* while pairing and ovipositing is interesting. In flight when the male *Enallagma* is carrying the female, grasping her by the prothorax, the legs of the latter are drawn up close to the body, and, while resting in copulation, they usually hang extended on either side of the abdomen of the male, or they may remain in their original position, folded to the body. While ovipositing the male and female are usually submerged, the male grasping the female and both clinging to some aquatic plant in which the eggs are being placed. In the case of *Celithemis fasciata* in flight the male grasps the female by the head, the legs of the latter hanging extended. In copulation the abdomen of the male is grasped by all the legs of the female, or the second and third pairs of legs may grasp the abdomen of the female herself. In ovipositing the male and female hover and flit about "in couple," the female frequently touching the tip of her abdomen to the water.—E B. Williamson, Carnegie Museum, Pittsburgh.

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* In my collection is a pair of *Aeschna constricta* Say, taken in copula, October 1, 1893, in Delaware County, Pa., by myself, killed and pinned in the copulatory position. The appendages of the male grasp the head of the female in the manner above described by Mr. Williamson.—P. P. CALVERT.

Allorhina nitida Linn. as a Fruit Pest.—I do not remember to have seen a mention of this insect as a fruit pest I recently received a number of the beetles from Mr. George F. Breninger, who obtained them at Phœnix, Ariz., and writes concerning them as follows: "They are the most destructive insect on fruit I have ever seen. They begin with the first peaches that ripen and continue until about the first of October, when they disappear. I have seen so many on a peach as to completely hide it, and they go to the ground with much buzzing when the fruit drops You will notice the cutting apparatus on the top of the head with which it digs up the flesh of the fruit. It also feeds to some extent on melons and tomatoes."—C. P. Gillette.

Is *Ceratomia catalpæ* spreading northward? In the November number of The News (page 231) this southern species is recorded from Delaware County, Pa. In 1893 I received through Prof. Bcekwith, then of Delaware College, two specimens of this moth from Sussex County, Del., and in 1894. in a large quantity of electric light material taken in this city (Wilmington, Del.), I found a single specimen; but this year the larvæ have appeared on the catalpa trees in great numbers, and the moths were not rare at the lights; so that in this State *Ceratomia catalpæ* appears to have spread northward, and has certainly greatly increased in numbers, where it was formerly very rare.—Frank M. Jones, Wilmington, Del.

Grasshoppers in New Mexico.—This year (1898) we have had quite a plague of grasshoppers in the Mesilla Valley. The species concerned were all residents. The principal offender being *Melanoplus differentialis*, with *M. femur-rubrum* a fair second. *M. aridus* was common, but seemed to restrict itself almost entirely to the native grasses The interesting feature of the attack was that it was not participated in by three Melanoplini (I prefer this term for the tribe to Melanopli), which were very common in the immediate vicinity. *Melanoplus herbaceus* occurred in immense numbers on the *Pluchea borealis*, *Æoloplus elegans* was equally abundant on *Atriplex canescens*, while *Hesperotettix viridis* was quite common on *Bigelovia* (or *Isocoma*) *heterophylla* var, *wrightii*. Each of these species is colored like its food-plant, and never by any chance leaves it for the cultivated fields.

At Tularosa, N. M., this fall, I was surprised to find great numbers of a *Melanoplus* quite new to me, allied to *M. bivittatus*. It proves to be *M thomasi;* (Scudd. Revis, Melanopli, p. 368,) a species only known hitherto by a single male captured by Bruner in the State of Durango, Mexico! Its habits are quite like those of *differentialis* and *bivittatus*, so it will undoubtedly prove injurious. The specimens were taken in the yard at the back of the hotel, where grape vines and fruit trees were cultivated The genuine *M bivittatus* is common enough in New Mexico in the Transition Zone, as at Santa Fe, but is never seen at the lower levels.

T. D. A COCKERELL.

MEGETRA VITTATA INJURING SUGAR BEETS.—Now that so much interest is being taken in sugar beets, it may be worth while to record that Mr. C. E. Mead sent me two specimens of this curious Meloid on Sept. 3, with the information that they were injuring sugar beets at Aztec, N. M. The specimens differ slightly from the form of the insect found in the Organ Mts, N. M., in that the dull orange marks on the elytra are confined to the subcostal region, instead of forming a well marked network covering the greater part of the elytra

T. D. A. COCKERELL.

We are accustomed to hear of large spiders coming from tropical regions in bunches of bananas. The ordinary statement about these spiders is that they are "tarantulas." The genuine "tarantulas" belong to the family Theraphosidae, and the known habits of these spiders are not such as would lead one to suppose that they would seek shelter in banana bunches. "Tarantulas" are ground spiders and rarely climb trees. So it is not surprising that the large spiders found occasionally in bunches of bananas prove to belong to quite different groups.

During the past few years I have had several large spiders sent me that were taken from bananas. These spiders belong to two species. The larger and heavier one is *Ctenus ferus* Perty. The family Ctenidæ is a small one, and by most arachnologists considered close to the common Lycosidæ. They are wandering spiders, making no web, and are often found on trees Two species occur in our Southern States This particular species was first known from Brazil, but is now known to inhabit various parts of South and Central America. It has been sent me from Albany, N. Y., New York City, Ft. Collins, Colo., and lately I have seen a specimen from Corvallis. Ore. It has stout jaws, long legs and a hairy body, so it is probable that most of the "tarantulas" from bananas are referable to this species

The other spider sent me as occurring among bananas is *Heteropoda venatoria* Linn, the so-called huntsman spider, a common inhabitant of all tropical countries. Specimens have been seen from New York City and Corvallis, Ore. This spider belongs to the family Sparassidæ, closely related to the Thomisidæ. They spin no webs, but wander in search of prey This species is quite flat, and has very long legs. The female carries her egg-sac under the body. Nothing is known regarding the poisonous qualities of these spiders, but they are probably much less dangerous than the true "tarantulas." Nathan Banks.

An Appeal in Behalf of Entomology and Kindred Sciences.—In the interest of entomology, it would be a good plan if every entomologist in the United States would petition their representatives in Congress to have paragraph 666 of the tariff law of 1897 amended, so that specimens of natural history for scientific collections be admitted free of duty, whether intended for private or public use. The paragraph in question comes under the free list, and reads as follows: "Specimens of natural history, botany and mineralogy when imported for scientific public collections, and not for sale."

A law that tends to discourage private scientific research in natural history should be blotted out immediately, as it is a disgrace to a civilized nation. Entomology, especially, merits all the encouragement possible, and one of the best ways of helping the cause would be to remove the barrier from the private student. All who read this are earnestly requested immediately to petition their representatives at Washington, urging that the section in question be amended, and that without delay. Edward A. Klages.

Notes on the Remotest Corner of Mexico.—At present the northern part of the State of Guerrero is considered to be the least known district of the republic. Lying between the route from Toluca to Colima and the old road from Acapulco up to Chilpancingo and Mexico City, it is almost untraveled. On account of the long dry season it is but little cultivated, and the hills are sparsely covered with stunted trees. The altitude ranges from 1,000 to 2 000 feet, with "cerros" of 3,000 to 5,000 feet. The numerous gold and quicksilver mines of the region and the "Gran Pacifico" railroad, which is building, will soon bring the country into prominence.

Though at the present time [Dec., '98] the dry season is only fairly begun, the apparent insect fauna is hardly 5 per cent. of that of the rainy season. There is still a good variety of Orthoptera, especially Locustidæ and Gryllidæ. Odonata are, of course, to be found along the Rio Mescala and Rio Cocula; Gomphinæ not met with. Tarantulas still prowl and scorpions still lurk. The wood-boring Coleoptera "hold their own" in the narrow timber strips along the rivers; but all the Phytophaga are hibernating. Of Diptera and Lepidoptera there is left scarcely a trace. A hot desolate country just now, but one of the most interesting corners of the neotropical region *when it rains*—O W. Barrett, Tacubaya, D. F., Mexico.

In Mr. Welles' article (Destructive Work of Daremma Catalpæ), in your December number, the mention of unusual abundance of Deilephila lineata larvæ calls to mind a similar occurrence in this section in 1897, which, judging from reports from other localities in the great western dry belt at that time, was probably of far-reaching extent. From even as far south as the Rio Grande Valley came a newspaper report, with the usual journalistic coloring, saying that millions of large striped worms, large as a man's finger, each with a horn on the end of its tail, were marching across the country in a body. These worms had never been seen there before, and no one could classify them. They did not stop nor turn back when they came to the Rio Grande River, but deliberately took to the current, and those that were not swept away continued the line of march from the other side. This of course, is the reporter's sensational description of an extraordinary appearance of some sphingid caterpillar, possibly that of D. lineata.

While I was engaged in netting Catocalas about a wooden station building of the railway at Green River, Utah, in August of the same year, a resident who observed me ventured the information that I should have been there in June, "for the whole desert was then alive with big green striped worms."

The foot hills about Salt Lake City were, during the same period, over-run with countless myriads of the larvæ of D lineata. They always preferred as food plant *Clarkia rhomboidea*. *Rosa fendleriana* and *Salix longifolia*. During the previous year (1896) these larvæ were quite uncommon, but the moths were abundant I remember counting thirty of the latter about a single electric lamp at one time, but during the season just past (1898) I failed to find a single larva of this species, and but very few of the moths. - G. WESLEY BROWNING, Salt Lake City, Utah.

THE remarks in the December number of THE NEWS, about the prevalence of the different species of *Pieris*, interested me very much, because I find among my field notes some observations of the same nature.

In 1895 P. oleracea was everywhere in the vicinity of Salt Lake City, from the bottom of the valley to the neighborhood of nine or ten thousand feet above sea level. Since that time it has steadily decreased until, during the last season, it has been almost a rarity here, and as it has disappeared, P. rapæ, which was not abundant in 1895, has increased prodigiously. P. protodice, so far as I can judge, has remained of about the same numbers, being every year common but at no time specially plentiful. I have often wondered what are the conditions that govern the limitations of these species.—G. WESLEY BROWNING, Salt Lake City, Utah.

NOTE ON CHRYSOPHANUS HELLOIDES.—In 1895 I received from Utah some specimens of *Chrysophanus helloides*, and in September of the same year took at Roby, Ind., 7 specimens of what I at the time of capture thought was *C. hypophleas*. When spread I compared them with my cabinet specimens and found them to be C. helloides. On reporting this to some collectors who had been interested in this (Chicago) field for upward of 25 years, I was surprised to learn that the species had never been reported so far East An inquiry through the columns of THE ENTOMOLOGICAL NEWS brought the information that its furthest previous Eastern appearance had been in Western Nebraska.

I notified all the Chicago collectors to be on the lookout for it in 1896, with the result that it was reported from all parts of the district, and both in the spring and fall It is now found throughout the summer, as I have this year taken it in each month from May to September.

Last fall, in making exchange with a Minneapolis, Minn., collector, I received a lot of Chrysophanus sp.? and at the same time a request for *C. helloides.* In the lot received from my correspondent were *nine* specimens of *helloides*, thus establishing a new locality for the species. It seems to be spreading eastward, and I would like to hear from any one noting its occurrence further East or South than Chicago.—JOHN L. HEALY, Sec. Chicago Entomological Society.

Entomological Literature,

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in **HEAVY-FACED TYPE** refer to the journals, as numbered in the following list, in which the papers are published; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

4. The Canadian Entomologist, London, Ont , Dec. '98.—**5.** Psyche, Cambridge, Mass., Jan '99.—**7.** Bulletin No. 18, new series, U. S. Department of Agriculture, Division of Entomology, Washington, '98. —**9.** The Entomologist, London, Jan. '99.—**11.** The Annals and Magazine of Natural History, London, Dec. '98 —**21.** The Entomologist's Record, London, Dec. 15, '98.—**22**. Zoologischer Anzeiger, Leipsic, Dec. 12, '98.—**33d.** Denkschriften, kais Akademie der Wissenschaften, Mathematisch-Naturwissenschaftliche Classe, lxiv, Vienna, '97. —**33s.** Sitzungsberichte of same.—**34.** Insekten Börse, Leipsic, '98.—

99. Bulletins, Cornell University Agricultural Experiment Station, Ithaca, N. Y., Dec. '98.

The General Subject.—The Zoological Record for 1897. London, '98. Brown, A. W. Arachnida 50 pp., Myriopoda and Prototracheata 19 pp.; Sharp, D., Insecta, 300 pp.—Brandicourt, V. Protective colors, Bulletin, Société Linnéenne du Nord de la France, Amiens, Sept.-Oct., '97.—Carret, A. M.F. Guillebeau and his entomological works (cont.), L'Echange, Revue Linnéenne, Lyon, Dec. '98.—Comstock, J. H., and Needham, J. G. The wings of insects iv, figs., The American Naturalist, Boston, Dec '98.—Danby, W. H. and Green, C. DeB. Report on the Entomology of British Columbia, 1 pl. Bulletin of the Natural History Society of British Columbia. Victoria, 1893.—Heyne, A. Hints on use of duplicates for the enrichment of one's own collection, **84**, Dec. 22.—Howard, L. O. The dispersion of terrestrial species in general and of insects in particular by the agency of man. [French transl.] Notes et Revue, Archives de Zoologie Experimentale et Generale (3) vi, 3. Paris, '98.—Oudemans. J. Th. De Nederlandsche Insecten. Aflevering 9 s Gravenhage. Martinus Nijhoff. '98. (Lepidoptera pp: 385-432.-Diptera pls. xx-xxii.)—Schaufsus, C. The significance of formol for the insect collector, **84**, Dec. 8.—Semper, G. Die Nachtfalter-Heterocera, Zte Lieferung, 7 pls. Reisen im Archipel der Philippinen von Dr. C. Semper. Zter Theil. Wissenschaftliche Resultate, 6 ter Band. Wiesbaden. C. W. Kreidel's Verlag. 1898.—Tichomirow, A. On the anatomy of the insect testis, figs., **22**.—Weller, S. A bibliographic index of North American Carboniferous Invertebrates, United States Geological Survey. Bulletin 153, Washington, '98.

Economic Entomology.—Anon. The introduction of beneficial lady birds from Australia into India, **7**; Recent injury by the sugar-cane beetle and related species, **7**; A new enemy to the grape vine in Mexico, **7**; Cotton field insects, **7** : An interesting case of myiasis, **7**; A radical novelty in chinch bug work, **7**.—Baudoin, M. The employment of ants in operative medicine, Revue Scientifique du Bourbonnais, Moulins, Dec. 15, '98.—Behr, H. H. Notes on ticks, **7**.-Brauer, F. Contributions to the knowledge of extra-European Œstridæ and parasitic Muscariæ, 1 pl., **33d**.—Chittenden, F. H. Biologic note on *Conotrachelus elegans* Say, **7**; A new sugar-beet beetle [*Monoxia puncticollis* Say], **7**; A leaf-beetle [*Chrysomela* (*Zygogramma*) *exclamationis*] injurious to cultivated sunflower, **7**; A flea beetle living on purslane, **7**: Recent injury by bark-beetles - a correction, **7**; Twig pruners and allied species, figs., **7**; A destructive borer enemy of birch trees, with notes on related species, figs., **7**.—Clement, A. L. Bees and wasps living in superposition in the same hive, fig., Bulletin, Société Nationale d'Acclimatation de France, Paris, Aug. '98.—Coquillett, D. W. A cecidomyiid injurious to seeds of sorghum,* **7**.—Dixson,

H. Cyanide of potassium as an insecticide, Gardeners' Chronicle. London, Dec. 17, '98.—Fletcher, J. The Hessian fly attacking timothy, 4.—Gould, H. P. Second Report on the San José scale, with remarks on the effects of kerosene on foliage, figs. 99, no 155.—Grassi, B. Relations between malaria and arthropods, Rendiconti, Accademia dei Lincei, Rome, Dec. 4, '98.—Howard, L. O. The work against *Icerya purchasi* in Portugal, with an account of the introduction from America of *Novius cardinalis*, 7; The San José scale on dried fruit, 7.—Hubbard, H. G. and Pergande, T. A new Coccid on birch, figs.,* 7.—King, G. B. China asters infested by a Coccid, 5.—Osborn, H. The Hessian fly [*Cecidomyia destructor*] in the United States, 8 text figs., 2 pls. Bulletin 16, new series, U. S. Dep't. of Agriculture, Division of Entomology. Washington. D. C., '98.—Pergande, T. The peach Lecanium, figs.,* 7; A new plant louse on tobacco,* 4.—Slingerland, M. V. The grape-vine flea-beetle. figs., 99. No. 157.—Numerous minor "Notes from Correspondence" in 7.

Arachnida.—Kowalevsky, A. A new lymphatic gland in the European scorpion, 2 pls., Memoires. Academie Imperiale des Sciences, St. Petersburg, v. 10., '97. Rec'd Dec. 20, '98.—Nalepa, A. To knowledge of the Phyllocoptinæ, 5 pls., 33d.

Thysanura—Becker, E. Some remarks on the anatomy of *Machilis maritima* Latr., 22.

Hemiptera.—Anon. The European bat bug [*Acanthia pipistrelli*] in America, 7.—Berg, C. Descriptions of new Hydrometridæ of the Argentine republic, Comunicaciones del Museo Nacional de Buenos Aires, i, 1. Aug. 24, '98.—Breddin, G. Hemipterological studies iv, Jahresbericht u. Abhandlungen, Naturwissenschaftliche Verein in Magdeburg, '98.—Cockerell, T. D. A. Two new genera of Lecaniine Coccidæ, 9; See Hymenoptera.—Cockerell, T. D. A. and King, G. B. The Coccid genus *Sphærococcus* in Massachusetts,* 4.—Hubbard, H. G. and Pergande, T. See Economic Entomology.*—Kirkaldy, G. W. A guide to the study of British water-bugs (aquatic Rhynchota), 9.—Marlatt, C. L. A new nomenclature for the broods of the periodical Cicada, 7.—Mokrzhetski, S. Some observations on the cycle of the sexual development of the "blood louse" (*Schizoneura lanigera* Hausm.) (Transl. from the Russian by P. Fireman), 7.—Montgomery, T. H., Jr. The spermatogenesis in *Pentatoma* up to the formation of the spermatid, 5 pls., Zoologische Jahrbucher (Anat. u. Ontog. Abtheil.) xii, 1, Jena, Nov. 15, '98.—Pergande, T. See Economic Entomology.*—Reuter, O. M. Hemiptera Gymnocerata of Europe, the Mediterranean basin, and Asiatic Russia, iv, 6 pls.; v, 10 pls. [In Latin], Acta Societatis Scientiarum Fennicæ, xxiii. Helsingfors, '97. Rec'd Dec. 24, '98.—Scudder, S. H. An unknown tract on American insects by Thomas Say, 5.—Speiser, P. A new bat-parasite of the order Hemiptera, fig., 22.—Tinsley, J. D. Notes on Coccidæ, with descriptions of new species, figs.,* 4.

Coleoptera.—Anon. Westward spread of the common asparagus beetle [*Crioceris asparagi*], 7.—Chittenden, F. H. See Economic Entomology.-Pic, M. Description of Coleoptera [*Melyrodes*], Le Naturaliste, Paris, Dec. 1, '98.

Diptera.—Brauer, F. Contributions to the knowledge of the Muscaria schizometopa and description of two species of *Hypoderma*, 1 pl., 33s, cvi, 4-7, April-July, '97. Rec'd Dec. 20. '98.—Coquillett, D. W. See Economic Entomology.*—Kellogg, V. L. The mouth parts of the nematocerous Diptera, i, 5—Scudder, S. H. See Hemiptera.

Lepidoptera.—Bacot, A. Notes on hybrids (2nd and 3rd crosses) between *Tephrosia bistortata* and *T. crepuscularia*, 21.—Butler, A. G. On the Pierine butterflies of the genus *Catophaga*, 11; Notes on the genus *Euchloe* Hübner, a genus of the Pierinæ, 9.—Chapman, T. A. A note on the action of the clasps in *Erebia*, 21.—Chittenden, F. H. A leaf tyer of grape and elderberry, 7.—Dod, F. H. W. Notes on some Alberta butterflies, 4.—Dyar, H. G. Life-histories of North American Geometridæ, 5.—Merrifield, F. and others. Protective coloration of Lepidopterous pupa, 21.—Moore, F. Lepidoptera Indica. Part xxxiv, London, Lovell Reeve & Co. '98. Rec'd Jan 9, '99. (Vol. iii, pp. 193-216, pls. 263-270. Nymphalinæ-Limenitina).—Ruhmer, G. W. How does *Araschnia levana* ab. *porima* O. arise in nature? Entomologische Nachrichten, Berlin, Dec. '98.-Sherborn, C. D. and Durrant, J. H. On the dates of Jacob Hübner's "Sammlung europäischer Schmetterlinge," 11.—Skinner, H. A Synonymic Catalogue of the North American Rhopalocera. The American Entomological Society. Philadelphia: issued Dec. 15, '98. Pp. 100, xiv. See The News for January, page 21.—Smith, J. B. Descriptions of new Noctuids,* 4.—Soule, C. G. Early Stages of *Triptogon modesta*, 5.

Hymenoptera.—Ashmead, W. H. Classification of the horntails and sawflies, or the sub-order Phytophaga, 7 (concl.), 4.—Anglas, J. On the histolysis and histogenesis of the digestive tube of Hymenoptera during metamorphosis, Comptes Rendus, Société de Biologie, Paris, Dec. 17, '98.—Anon. An invasion of the digger wasp [*Megastizus speciosus*], 7.—Cockerell, T. D. A. New and little known Hymenoptera taken by Prof. C H. T. Townsend and Mr. C. M. Barber in New Mexico in 1898.* 11; Notes on the nomenclature of some Hymenoptera, 9; Some synonymy, [and] Segregates from *Perdita*, 5.—Marlatt, C. L. Some new Nematids,* 4.

DOINGS OF SOCIETIES.

At the December meeting of the Feldman Collecting Social, nine members were present. Mr. H. Wenzel, on behalf of Dr. Griffith, read a communication on the coleopterous fauna of the Salt River Valley, Arizona. The northern fauna commingles with the Sonoran of Mexico. The paper contained a list of five species of Cicindelidæ and seventy-four species of Carabidæ taken by Dr. Griffith.

Dr. Smith referred to a change of faunas due to the introduction of sheep. On one side of a wire fence the lower anstial fauna of the region existed, whereas on the opposite where the sheep pastured was the common widely distributed fauna of the United States.

He also exhibited some advance sheets of his forthcoming new edition of the "Catalogue of the Insects of New Jersey," pertaining to the Othoptera. The new list will contain 142 species of this order against 114 in the old, and every species has a definite record, whereas in the old list many records were merely guess work. The same large percentage of increase was shown in the other orders. He further stated that some specimens of *Conocephalus* recently taken in the "Neck," Philadelphia, had proven to be *C. gladiator* Redt. heretofore only known to occur in Texas and Mexico.

Mr. Johnson exhibited a specimen of *Cicada septemdecem* taken at Edge Hill, Montgomery county, in June last by Mr. H. S. Viereck. It evidently represented brood seventeen due in this State in 1898, but the speaker had observed no specimens himself.

Dr. Smith said the brood due in New Jersey this year 1898 was peculiar in its distribution; it crossed the state diagonally from Trenton and then struck northward, though small isolated broods occurred at Vineland and near New Brunswick.

WM. J. FOX, Secretary.

At the annual meeting of the American Entomological Society held December 22, 1898, the following were elected to serve as officers for the year 1899: President, Henry C. McCook; Vice President, C. W. Johnson; Treasurer, E. T. Cresson; Recording Secretary, Henry Skinner; Corresponding Secretary, W. J. Fox; Curator, Henry Skinner; Librarian, W. J.

Fox; Publication Committee, E. T. Cresson, C. F. Seiss, B. F. Smith; Executive Committee, P. Laurent, Chas. Liebeck, H. W. Wenzel; Finance Committee, J. W. McAllister, C. S Welles, C. C. Cresson. HENRY SKINNER, Secretary.

At a business meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia, held December 22, 1898, the following were elected to serve as officers for the present year: Director, Philip Laurent; Vice Director, H. W. Wenzel; Treasurer, E. T. Cresson; Conservator, Henry Skinner; Recorder, Henry Skinner; Secretary, W. J. Fox.

HENRY SKINNER, Recorder.

THE WASP AS AN ENGINEER.

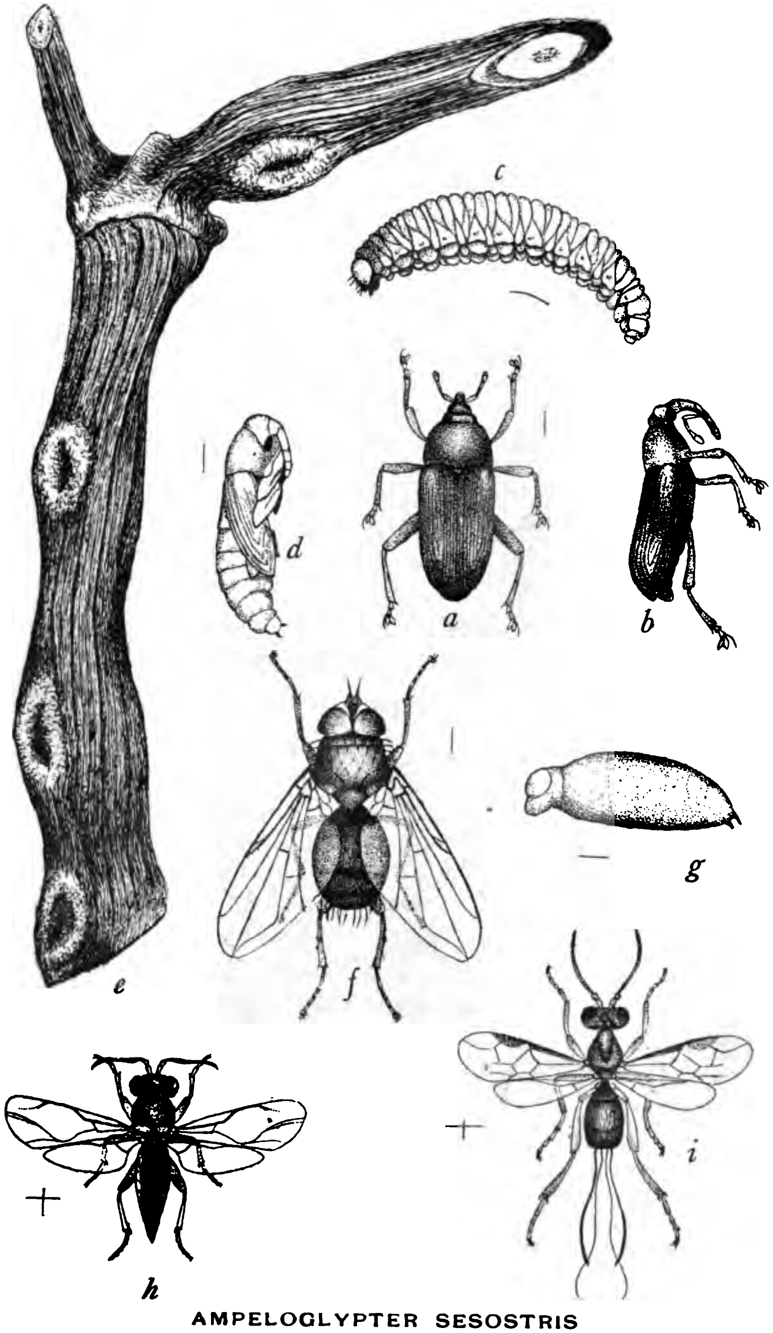
Several members of the United States Engineer Corps were witnesses recently of a feat of insect engineering near the road on which they were working. One of their number found a blue ground wasp dragging along the ground a dead swamp spider one-quarter the size of a full-grown tarantula. Whether the wasp killed the spider or found it dead is a question beyond solution. He was having a hard time dragging his prey along, and presently left it to go prospecting for his abode. The discoverer of the wasp called his companions, and one of them in coming stepped upon the wasp's ground hole, crushing down some blades of dried grass across it. This caused no little trouble to the insect, who, upon locating the hole, nipped away at the obstrutcing stalks with his strong mandibles until he had cleared a passage. Then he went back and sized up the spider, walking around the big body and surveying it from all sides.

"He's reckoning that the hole isn't big enough," said one of the engineers.

"That's all right; he'll fix it," said another, as the insect went back and began vigorously widening the entrance to his domicile.

Again he returned to the spider, seized it and dragged it to within a foot of the orifice. To the spectators it was evident that more work would have to be done before the spider could be dragged in. This struck the wasp, too, for again he ran around the body, examing it carefully, and returned to the hole to take measurements. He went to digging a second time. Having dug for two minutes he brought his prey to the edge of the hole, nipped out a piece of dirt here, cut away a grass stem there, and after fifteen minutes of hard and skilful labor disappeared under ground, dragging the spider after him, doubtless to form the *piece de resistance* in a winter storehouse. The engineers then resumed their work, exchanging comments of admiration.—*Chicago Inter-Ocean.*

January number was mailed January 20th.



AMPELOGLYPTER SESOSTRIS

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

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SOME NOTES ON THE GRAPE-CANE GALL-MAKER, AMPELOGLYPTER SESOSTRIS (Coleoptera).*

BY F. M. WEBSTER.

In his First Report as State Entomologist of Missouri, p. 131, Dr. C. V. Riley describes this species under the name *Madarus vitis*, stating that the larva formed its gall in the Fall, pupating in June and developing to the adult about two weeks later. He therefor gave as a remedial and preventive measure the collecting and burning of infested canes during Winter. In the "American Entomologist," Vol. II, p. 105, the same writer states that the galls first become visible towards the latter end of July, the larvæ producing them wintering over within these galls, but not becoming full grown until the Spring of the following year, pupating during the latter part of June and in a couple of weeks developing to adults.

On May 6, 1898, a lot of dried leaves were brought from a vineyard near the lake shore about Gypsum, O., where they had fallen the Autumn before and been blown by the winds into bunches along an Osage orange hedge, remaining there throughout the Winter and placed in a breeding cage in the insectary. From among these leaves adults of *A. sesostris* began to appear May 23, and continued to do so in considerable numbers for several days.

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* Read before the Ohio State Academy of Science, December 29. 1898.

On June 24 my assistant visited the vineyard from which the leaves had been taken, and found a large number of galls on the new growth of cane, and within these galls were larvæ of considerable size. The same vineyard was again visited by myself on August 11, when all stages of development except the egg were found within the galls, the larvæ now being all of them nearly or quite full grown, while some of the adults were observed in the act of making their way out from the galls. I visited this vineyard again on September 15, and could then find only a single pupa (*a*), after long and patient searching, this being in a gall in the latter growth of cane, all other galls, except for parasites, being entirely empty. A later examination, made early in November, revealed not a single adult in the galls, but a solitary one (*a*, *b*) was discovered among the fallen leaves, where it was probably in hibernation. In this series of observations it seems to me that we have conclusive proof that in Northern Ohio at least the species is single brooded, the adult wintering over among fallen leaves and other similar rubbish, coming forth in Spring in time to begin oviposition in the earliest growth of cane. The greater abundance of galls in the earlier growth of cane points to the fact that the adults are abroad in numbers, and ready to begin oviposition, as soon as there is sufficient growth of young cane to afford them the necessary nidus, and while the period of oviposition for the species in any one locality may be, and probably is, considerably protracted, though, as previously shown, the season of development is over by the first of October.

From within the galls I have taken pupæ from which a parasite, *Catolaccus tylodermæ* (*h*), known to also attack the larvæ of *Tylodermæ foveolatum*, was also reared, and also pupæ (*g*) of a small fly, *Myiophasia ænea* (*f*). Of three of these latter pupæ, two gave me adult flies, while the third developed a secondary, hymenopterous parasite (*i*), *Calyptus tibiator*.

As the locality where these observations were made is fully three degrees of latitude north of St. Louis, Mo., it is quite possible that there may be a considerable difference in the habits of this species, and this seems all the more likely from the fact that while the climate along the lake shore is really milder in Winter than it is a few miles farther inland, yet the ice in the lake, in Spring, usually remains long enough to delay the putting forth of the early growth of cane, and also tends to keep the insect longer in hibernation. It is also interesting to note that although the hibernating adults were placed under a comparatively high temperature, probably from 65° to 80° Fah., yet they did not bestir themselves until about the time when proper facilities for oviposition would be offered them in their native haunts.

EXPLANATION OF PLATE.

Ampeloglypter sesostris (Lec.): *a*, *b*, respectively, back and side view of adult; *c*, larva; *d*, pupa; *e*, galls in grape cane; *f*, *Myiophasia ænea; g*, pupa case of same; *h*, *Catolaccus tylodermæ; i*, *Calyptus tibiator*.

THREE NEW SPECIES IN THE GENUS DIPLOPLECTRON FOX (Hymenoptera).

BY WILLIAM H. ASHMEAD,

Assistant Curator, Division of Insects, United States National Museum.

Up to the present time but a single species is known in the genus *Diploplectron* Fox, the type *D.* (*Liris*) *brunneipes* Cresson. Recently, in arranging a large collection of Hymenoptera, presented to the United States National Museum by Professor Carl F. Bader, three additional species were recognized, which are described below:

TABLE OF SPECIES.

Black or mostly black, 2.

Uniformly pale ferruginous, except a spot between the ocelli base of metathorax above and more or less of the three or four apical abdominal segments, which are black or dusky. (1) D. ferrugilous Ashm., n. sp.

2. Pronotum and tegulæ brownish-yellow.

Mandibles, except tips, four basal joints of antennæ, tegulæ, anterior and middle legs and hind tibæ pale ferruginous. (2) D. brunneipes Cr.

Pronotum black.

Face with a triangular white spot at lower angle of inner orbits; clypeus white bidentate anteriorly. the anterior edge and teeth black; mandibles except tips white; anterior femora beneath their tibiæ and tarsi, and the middle and hind tibiæ and tarsi, rufous.

(3) D. bidentatus Asm., n. sp.

Face black; clypeus anteriorly rufous, simple, not dentate; mandibles except tips, anterior and middle tibiæ and tarsi, hind tarsi and usually the tip of abdomen, rufous.

(4) D. foxii Ashm., n. sp.

(1) **D. ferrugineus**, n. sp.

♀ Length 4.6 mm. Uniformly pale ferruginous, except apex of mandibles, a spot between the ocelli and base of metathorax *above*, which are black. The three or four apical abdominal segments are also more or less dusky or blackish. Wings hyaline, with a large smoky blotch behind the third cubital cell and including the apical half or more of the cell. Head and thorax, except metathorax, smooth, polished.

Hab.—Colorado. Type, No. 5061, U. S. N. M. (Baker Coll.)

(2) **D. bidentatus**, n. sp.

♀ Length 7 mm. Black; face with a triangular spot at base of inner orbits, a narrow line beneath the eyes, the clypeus except anterior margin, and the mandibles except tips, white. Clypeus produced anteriorly into two black teeth; flagellum brownish beneath; legs black, the anterior femora beneath and all tibiæ and tarsi, rufous. The head anteriorly is closely punctate, the vertex coriaceous, with some scattered or sparse punctures; thorax shining, but sparsely punctate. Metathorax rugulose, opaque; abdomen shining, but very delicately microscopically reticulated. Wings hyaline, with a large smoky cloud behind the marginal cell and including the apex of the cell; stigma and veins piceous or dark rufous.

Hab.—Colorado. Type, No. 5063, U. S. N. M. (Baker Coll.)

(3) **D. foxii**, n. sp.

♀ Length 5—6.5 mm. Black; mandibles, except tips, the anterior and middle tibiæ and tarsi, hind tarsi and terminal abdominal segment, rufous. Wings subhyaline, with a dusky cloud behind the truncate marginal cell. Hind tibiæ behind, with a white line formed of silvery white hairs. Head and thorax, except metathorax, polished, impunctate; metathorax finely rugulose.

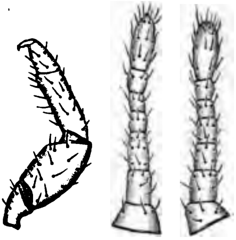
Hab.—Colorado. Type, No. 5062, U. S. N. M. (Baker Coll.)

THE TENTH ANTS'-NEST SPECIES OF COCCID FROM MASSACHUSETTS.

By J. D. Tinsley and Geo. B. King.

Ripersia minimus, n. sp.

Adult ♀. Length barely 1 mm.; covered with white secretion; color reddish-brown; rather plump. No lateral or caudal filaments observed with a hand-lense. Ovisac, enclosing the female, ellipsoidal, about 2 mm. long and 1½ mm. wide. Clear white, rather compact, cottony matter. Eggs oval, pale yellow, quite small. Antennæ concolorous with the body or nearly so; 7-jointed. 7 longest and thickest, 65-75 u long; 2 and 3 usually subequal, although 2 may be the longer, and 1 is sometimes longer than 3, 2 and 3 about 40 u long: joint 1 is usually about 30 u long; 6.5 and 4 are more or less globular in shape and usually 6 is the longer and 4 and 5 are subequal, although 4 may be the shortest; 6 about 23 u long, 4 and 5 about 25 u long. The following formulæ have been observed:



Antennæ and leg of *Ripersia minimus.*

7213(46)5–721(346)5.
7(23) 1645–7(12)3465.
7(23)16(45)
7231654

All the joints bearing rather large hairs. Legs concolorous with the body, rather stout and large compared with the size of the body. Femur 101 u long x 45 m wide; tibia 93 u long; tarsus 60 u long; tarsal digitules slender hairs without knobs; claw stout, with rather large denticle, 17 u long; digitules of claw long, slender knobbed. Epidermis bearing rather numerous gland spots and some scattered, rather large hairs. The margins of the abdominal segments bear groups of conical spines, usually two conical spines in a group. Anal ring with the usual six hairs. Caudal tubercles normal, each with a rather large seta, 100 u long, and several large hairs and conical spines.

Habitat.—South Lawrence, Mass., October 15, 1898, on the root of a plant in the nest of *Lasius Americanus* Em.

This is the smallest Dactylopiid with which we are yet acquainted, being probably a little smaller than *Ripersia rumicis* Mask. which is given as 1-24 inch = 1 mm. This differs from *R. rumicis* Mask. in being 7-jointed and not having the antennæ so close together.

THE SOUND-PRODUCING ORGANS OF LEMA TRILINEATA.

By C. M. Walker, Amherst, Mass.

When *Lema trilineata* is irritated or disturbed in any way it makes a curious shrill, squeaking sound, and if the insect be carefully watched, it may be observed that in producing this sound the tip of the abdomen is raised and vibrated very rapidly, causing it to move back and forth against the underside of the elytra. Upon examining the structure of the parts concerned, a hard horny area was found on the dorsum of the last segment of the abdomen (Fig. 1), composed of regular transverse ridges and divided by a median depression. This hard chitinous area is somewhat triangular in shape with the base at the middle of the anterior margin of the segment and the rounded tip near the middle. There are numerous hairs and spines scattered over the remaining portion of the segment (Fig. 2).

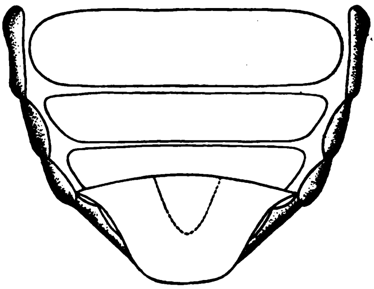


Fig. 1.—Upper side of posterior segments of abdomen, showing position of sound-producing organ.

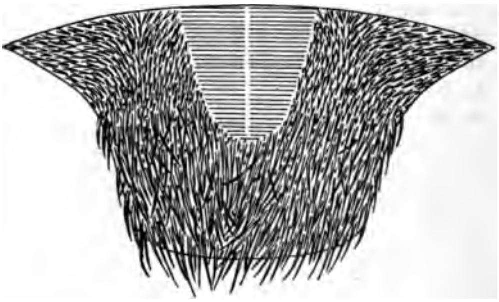


Fig. 2.—Upper side of posterior segment of abdomen, showing sound-producing organ.

With the aid of the compound microscope each elytron, especially on the tip and along the inner edge, was found to be covered with short spines directed posteriorly. The spines appeared to be of two kinds. Those along the extreme edge were larger and longer and fewer in number than those just back of the edge, which were of the character of modified scales. These scales were more or less flattened and were elevated at a slight angle, as seen when observed laterally. In order to produce the sound the beetle raises the end of the abdomen, and, bringing it in contact with the spines on the elytra, sets the tip of the abdomen in vibration. By the constant rubbing of the spines against the roughened portion the curious sound is made. The spines being directed posteriorly, the sound is produced only when the tip of the abdomen is raised. The sound is therefore intermittent, although it appears continuous because of the rapidity of the vibrations of the abdomen.

Since both sexes possess these organs, it does not seem probable that the sound is used for sexual attraction. This beetle has a pungent, disgusting odor, which possibly makes it distasteful to birds or other enemies. It may be that this sound is used as a note of warning.

A NEW DESTRUCTIVE CAPSID.

By P. R. Uhler.

Dicyphus minimus, n. sp.

A slender, cylindrical, black, polished, resembling *D. Californicus* Stal, but much smaller and more slender. Head much wider than the front of pronotum, highly polished, bald, moderately narrowed at base, front strongly convey, the line bounding it below deeply defined, clypeus promiuent; antennæ black, slender; the basal joint scarcely as long as the head, whitish at base, second fully twice as long as the basal and almost as thick, third and fourth more slender, the third longer than the others, the fourth nearly of the same length as the second; rostrum testaceous, piceous at tip, reaching behind the posterior coxæ. Pronotum black, a little wider than long, with the calloseties transverse, middle line impressed, pale in less mature specimens, collum narrow, very distinct, testaceous or lemon-yellow, surface transversely wrinkled, more convex on the posterior lobe, lateral margins distinctly reflexed; sternum, coxæ and legs yellowish-white, with the tarsi piceous at tip. Scutellum black, polished, longitudinally carinated, marked with two yellow, triangular spots. Hemelytra translucent, pale yellow or testaceous dusky on the inner half throughout, minutely, remotely punctate, the base of cuneus with a large black spot; membrane dusky, veins and veins of wings blackish. Abdomen greenish, more or less black on the sides and at tip.

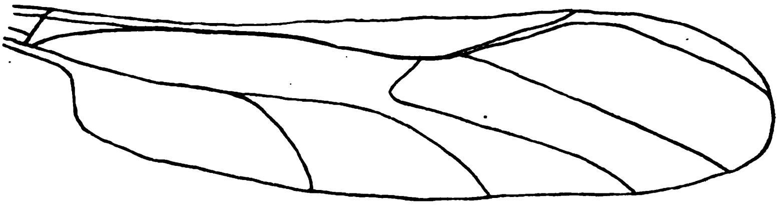
Length to tip of venter ♂1½, ♀2 mm., to tip of hemelytra 2¾ mm. Width of pronotum ½ mm.

Numerous specimens of both sexes have been sent to me from various parts of Florida.

A NEW DIPTEROUS FAMILY RELATED TO THE CHIRONOMIDAE.

By D. W. Coquillett, Washington, D. C.

Among a very interesting collection of Diptera recently received from Mr. C. W. Johnson for naming is a female specimen of a very singular fly, which I am unable to locate in any known genus or family. The shape and structure of the head, body and legs, and the unusual development of the first antennal joint, appear to indicate its nearest approach to the genus *Ceratopogon* of the family *Chironomidæ;* but the venation, as well as the general appearance of the insect, is very different from anything now located in that family. The pattern of venation is apparently a modification of that of a *Ceratopogon*, in which the third vein coalesces with the first and the fourth vein is forked (see the figure by Winnertz in Linnæ Entomologica, vol. VI, plate VI, figure 41). By a further union of the veins, resulting in the coalescence of the median portion of the first and fourth veins, and by the addition of a second fork to the fourth vein, the venation of the present form would be produced.



Although its relationship to the genus *Ceratopogon* is thus seen to be a rather intimate one, still the general aspect is strikingly different; besides the difference in venation already ready referred to, the unusually long and narrow wings, the widely separated eyes of the female, the concave instead of strongly convex vertex of the head, unite in giving the new form a very different appearance as compared to a *Ceratopogon*. The antennæ, which are broken off at the tip of the first joint in the single specimen before me, which, Mr. Johnson writes me, is the only one he succeeded in capturing, and the possession of a male specimen, may bring to light other differences than those revealed by the present somewhat mutilated specimen. Even these differences are, I believe, of sufficient importance to demand the establishing of a new family, the Stenoxenidæ, an opinion also shared by Mr. Johnson. The description of the new genus and species is as follows:

Stenoxenus johnsoni, new genus and species. Head narrower than the thorax; when viewed from in front twice as broad as high, vertex slightly concave, lower half of face sparsely covered with bristles. eyes of female widely separated, deeply emarginate opposite the antennæ, bare, wholly covered with facets of a uniform size; ocelli absent: proboscis about one-third as long as heighth of head, very thick, less than twice as long as wide: palpi about one-half as long as heighth of head, pendulous, sub-cylindrical, composed of three distinct joints which are sub-equal in length, and apparently with a very short one between the last two: first joint of antennæ unusually large, compressed, about one and one-half times as broad as long, emarginate at the apex (remainder of antennæ wanting). Body destitute of bristles, thorax truncate in front, not projecting over the head, destitute of a transverse suture: abdomen slightly narrower than the thorax and nearly twice as long, tapering posteriorly, the apex blunt. Legs slender, destitute of bristles. hind tibiæ each bearing a short stout spur at the apex of the inner side. the others destitute of apical spurs: front tibiæ twice as long as the first tarsal joint, the latter on all the tarsi much longer than any of the other joints: tarsal claws simple. empodium and pulvilli wanting. Wings bare. unusually long and narrow, projecting about one-third of their length beyond the tip of the abdomen. venation as in the accompanying figure: costal vein continued around the tip of the wing. but becoming obsolete on the basal part of the posterior margin: auxiliary. second and third veins wanting. first vein distinct at its base and apex only. elsewhere united with the fourth, which is forked near its middle, the upper branch also forked near its base: fifth vein forked near its middle. Halteres normal, color black. polished. lower part of face. mouth parts, coxæ. front and middle femora and the hind ones except their apices. also the middle tibiæ and their tarsi yellow. apices of hind femora. front and hind tibiæ and their tarsi brown: halteres brown, their bases yellow: hairs of the body very short. light yellow: wings whitish-hyaline. the veins dusky yellowish. those near the posterior margin only slightly lighter in color than those along the costa, apical portion of first vein faint. Length 3 mm. Delaware Water Gap. New Jersey. A single female specimen captured July 11th by Mr. C. W. Johnson. and by him kindly presented to the National Museum. Type No. 4109.

SOME NORTH AMERICAN GENERA OF THE DIPTEROUS GROUP, CALLIPHORINAE GIRSCHNER.

By Garry de N. Hough, M. D.

The masterly researches of Herr Ernst Girschner have thrown a flood of light upon the Cimmerian darkness of the classification of the Muscidæ. One of the groups clearly established by him is that of the Calliphorinæ, the North American genera of which form the subject of this paper.

The super-family Muscidæ is thus defined by Prof. Williston:

> Proboscis functional or rudimentary. In the former case usually short and with pseudotracheate labellæ, but sometimes elongate and adapted for piercing; palpi sometimes rudimentary, never jointed. Antennæ always three-jointed, the third joint simple, round, oval or elongate, compressed and always (except in *Cryptochaetum*, where it is entirely absent), with a bare, pubescent or plumose, dorsal or subapical arista. Auxiliary vein sometimes rudimentary, often more or less coalescent with the first longitudinal vein, usually distinct in its entire course; never more than one submarginal and three posterior cells present; the submarginal and marginal cells always open; basal cells never large, the second basal sometimes coalescent with the discal cell, the anal cell present or absent; posterior cross vein rarely absent. Pulvilli always present; empodia wanting; claws of the male often larger than those of the female.

For over sixty years dipterologists have divided the Muscidæ into two great series: Calyptratæ and Acalyptratæ. In general there is no difficulty in determining to which series a given form belongs, but to this rule there are exceptions. Girschner's definitions seem better than any others known to me. They are as follows:

> **Acalyptratæ**—Squamula alaris always distinctly developed, but never very large; squamula thoracalis usually lacking, at most present as an insignificant widening of the frenum squamulare. Posthumeral and intraalar macrochætæ not simultaneously present. Thorax usually without a complete transverse suture. Postalar callus absent. Hypopleural macrochætæ absent.

> **Calyptratæ.**—Squamula alaris always distinctly developed; squamula thoracalis very variable in size, in the higher forms larger than the squamula alaris, often very much larger. Both posthumera and intraalar macrochætæ present. Thorax with a complete translverse suture. Postalar callus present and separated by a distinct suture from the dorsum of the thorax. Hypopleural macrochætæ present or absent.

Even these definitions, as Girschner has pointed out, are not absolute, certain forms, especially among the Scatomyzidæ and Sapromyzidæ, being by the definition, Calyptratæ, while other very closely allied species are, by the definition, Acalyptratæ. Both these families are considered as families of the acalyptrate series by the best authorities.

Girschner separates the Calyptratæ into two grand divisions: Anthomyidæ and Tachinidæ, which are by no means identical with the families usually understood by those names.

Anthomyidæ.—Hypopleural macrochætæ absent. If three sternopleural macrochætæ are present their arrangement is always 1:2. Elbow (if any) of the fourth longitudinal vein without appendix. Ventral membrane usually present. Development of the squamula thoracalis very variable.

Tachinidæ.—Hypopleural macrochætæ present. If three sternopleural macrochætæ are present their arrangement is always 2:1 or 1:1:1. Fourth longitudinal vein almost always with an elbow, which frequently has an appendix. Ventral membrane usually not present. Squamula thoracalis always well developed, larger than the squamula-alaris, sometimes very large.

Girschner splits up his Tachinidæ into nine groups, one of which is the Calliphorinæ, which may be thus defined :

Calliphorinæ.—Hypopleural bristles present. Ventral membrane very rarely visible. Second ventral segment, in both sexes, lying with its edges upon and covering the edges of the corresponding dorsal segment, the other ventral segments lying free, at any rate in the male. Fifth ventral segment of the male frequently greatly developed, with its caudal border incised to a point beyond the middle. Usually only two posterior intraalar bristles. Color very frequently metallic. Arista, as a rule, long, plumose. Stigmata sometimes very large. Front of the male narrowed (eyes sometimes in contact), that of the female wide.

The following American genera belong to this group : *Pollenia*, *Compsomyia*, *Mesembrinella*, *Cynomia*, *Calliphora*, *Lucilia*, *Phormia* and *Protocalliphora*. It is quite probable that the Mexican genera, *Tyreomma* and *Chloroprocta*, also belong here, but of these I have as yet seen no specimens, and Mr. van der Wulp's descriptions do not permit undoubted conclusions to be drawn in the matter.

Pollenia and *Compsomyia* differ from the other genera of the group in having the vibrissal angle some distance dorsad of the edge of the mouth opening. *Pollenia* has the thorax thickly beset with fine, soft, woolly hair in addition to the macrochætæ. Fresh specimens show this very well, but if the specimen is somewhat worn the woolly hair can often only be seen on the mesopleura or on the pteropleura beneath the wing. *Compsomyia* has no woolly hair and the dorsum of the thorax is distinctly striped. For this latter genus the name *Chrysomyia*, proposed by Desvoidy in 1830, should have priority over Compsomyia. Of *Pollenia* I have seen but one North American species, *P. rudis* Fabr. Of *Chrysomyia* I have two species, the common *C. macellaria* Fabr. and an undescribed species from California.

Mesembrinella may be distinguished by the following characters: Elbow of fourth longitudinal vein not angular, but forming a gentle curve much as Graphomyia, the apical cross vein convex outwardly. The third longitudinal vein either without spines or with a very few at the extreme base. Genæ naked.

Cynomia is a genus for which I find structural characters in the male sex only. The arista is usually plumose for not more than two-thirds its length. The hypopygium is very prominent; the apex of the abdomen ends with a pair of large, slightly curved, pointed processes, which are directed cephalad along the ventral surface of the abdomen, and usually more or less concealed by the fifth ventral segment; this fifth ventral segment is split in the median line from its caudal border about half way to its cephalic border. The female presents the most striking likeness to female Calliphoræ. Neither the shape of the head, the extent of plumosity of the arista, nor the chætotaxy being invariably such as to enable the separation to be made. It is true that an anterior intraalar, or a third posterior achrostical macrochæta, is rarely present, but their presence, though rare, is a bar to making their absence a generic character. I have found myself obliged to rely upon the rather more elongate form of *Cynomia* and still more upon the pure metallic color of the abdomen, which is almost absolutely free from pollinose coating (except in *C. elongata* Hough), to distinguish female Cynomyiæ from Calliphoræ.

Of *Cynomia* I know four species: *mortuorum* L, *americana* Hough, *elongata* Hough and *hirta* Hough.

The genera *Calliphora*, *Lucilia* and *Phormia*, established by

Robineau-Desvoidy in 1830, have not been accepted by all subsequent writers on diptera.

Macquart in 1834-1835 accepted *Calliphora* and *Lucilia;* Meigen in 1838 accepted *Lucilia;* Zetterstedt in 1845-1849 and 1859 agreed with Meigen. Rondani in 1856 and 1862, finding no characters on which to separate them, puts all three in one genus, *Mya* or *Somomya.* Schiner in 1862 recognizes *Calliphora* and *Lucilia* and includes *Phormia* in the latter. Finally at the present time Prof. Brauer accepts *Calliphora* and *Lucilia,* but does not mention *Phormia.*

The fact is that a satisfactory characterization of these genera is very difficult. Still, I believe that it can be found in the arrangement of characteristic macro- and micro- chætæ of the genæ, thorax and third longitudinal vein of the wing. To these characters I would add the form of that part of the thorax which is caudad the transverse suture. To complete the satisfactory distribution into genera of all the species of this group known to me I must establish a fourth genus, which I propose to call *Protocalliphora* for the two species *Musca azurea* Fall. and *Musca chrysorrhœa* Meig.

I consider *Phormia* and *Protocalliphora* as less highly developed, more primitive, than *Lucilia* and *Calliphora,* because they combine characters of the latter and because their chætotaxy is less regular, more variable and the individual macrochætæ are frequently less well developed. The two former have the thorax caudad the transverse suture distinctly flattened, while in *Lucilia* and *Calliphora* no such flattening exists.

In *Lucilia* and *Calliphora* the number of dorsocentral and achrostical bristles caudad the suture is unvarying for any species, and each individual macrochæta is well developed. In all the species that I have seen these dorsocentrals number three and these achrosticals either two or three.

In *Phormia* and *Protocalliphora* the posterior dorsocentrals, and achrosticals, one or both, vary in number or are poorly developed.

Calliphora.—Type *C. vomitoria* L. thorax not flattened, caudad the transverse suture. In any species the number of posterior dorsocentrals and achrosticals is constant, and both series consist of well developed macrochætæ. The genæ seen with an amplification of twenty diameters are distinctly hairy. The third longitudinal vein has spines at its base only. The dorsal surface of the squamula thoracalis is hairy.

The species known to me which belong here are: *vomitoria* L., *erythrocephala* Meig., *violacea* Meig., *anthracina* Meig., *latifrons* nov. sp. and *nigribucca* nov. sp., which is, perhaps, only a variety of *erythrocephala*.

Lucilia.—Type L., *cæsar* L. Thorax not flattened caudad the transverse suture. In any species the number of posterior dorsocentrals and achrosticals is constant and both series consist of well developed macrochætæ. The genæ seen with an amplification of twenty diameters are absolutely naked. The spines of the third longitudinal vein are not limited to the extreme base, but extend well along the vein toward the small cross vein, say from two fifths to three quarters of that distance. The dorsal surface of both squamulæ is bare.

The species of *Lucilia* known to me are: *cæsar* L., *sericata* Meig., *nobilis* Meig., *sylvarum* Meig. and *spinicosta* Hough.

Phormia—Type *Phormia regina* Meig. Thorax somewhat flattened caudad the transverse suture. In any species the number of posterior dorsocentrals and achrosticals is inconstant; moreover, the macrochætæ of each series are not equally well developed, the most caudad being much the largest, and each succeeding one, as we pass cephalad along the series, being usually smaller until the last one or two are so small as to be distinguishable with difficulty or not at all from the surrounding microchætæ. The genæ seen with an amplification of twenty diameters are distinctly hairy. The spines of the third longitudinal vein are not limited to the extreme base, but extend, roughly speaking, half way to the small cross vein The dorsal surface of the squamula thorcalis is bare.

The species of *Phormia* known to me are: *regina* Meig. and *grœnlandica* Zett.

Protocalliphora.—Type *P azurea* Fall. Thorax somewhat flattened caudad the transverse suture. The number of posterior dorsocentrals is fairly constant, though not so absolutely invariable in a species as in *Lucilia* and *Calliphora*; each macrochætæ of the series is well developed and all are of about the same size The posterior achrosticals are less well developed than the dorsocentrals, are variable in number in the same species and even on the two sides of the same specimen; in any specimen they may vary in size, these farthest cephalad being smallest. The genæ seen with an amplification of twenty diameters are distinctly hairy, the hairs being much coarser than in *Phormia* or *Calliphora* The spines of the third longitudinal vein are not limited to the extreme base, but extend about half way to the small cross vein The dorsal surface of both squamulæ is bare.

I am acquainted with two species of this genus: *azurea* Fall. and *chrysorrhœa* Meig.

ENTOMOLOGICAL NEWS.

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PHILADELPHIA, PA., MARCH, 1899.

EDITORIAL.

Prof. Smith, in his obituary notice of the late Mr. Hubbard, in this number, says: "A pupil of Mr. Schwarz in methods of collecting, he soon equaled his master, while in getting *at the really characteristic fauna of a region he was unexcelled.*" There are few collecting entomologists in this country that have this happy faculty of getting at the characteristic fauna, and it is this and this alone that is of value in the study of geographical regions and the distribution of species. The ordinary superficial collector picks up all the cosmopolitan species and all the showy things that are widely distributed, and often overlooks everything else. Some time ago the writer received a small collection of butterflies from Tucson, Arizona, and there was not a single species in the lot that is not found in Pennsylvania. Another lot from Arizona was almost entirely made up of common Eastern species. We are constantly in receipt of local lists for publication in THE NEWS that show this defect of superficial collecting, and, therefore, they are hardly worth the room they take up. Mr. Hubbard's letters and field notes will be published in THE NEWS, and, doubtless, much information on these points will be available from this prince of collectors. We wish our collectors of experience would publish more about their methods, for the benefit of the entomological fraternity.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

ON THE LARVA OF EVERGESTIS FUNALIS, GROTE.– Late in July, 1898, I noticed that the *Portulacca* which grows abundantly on the campus of the N. M. Agricultural College, Mesilla Park, N. M., was shrivelling up and turning brown. A closer examination showed that it was attacked by enormous numbers of pyralid larvæ. Some of these larvæ, collected July 28th, were described as follows:

20. mm long, green, sage-green on back, with a transparent dark (not pigmented) dorsal stripe; sides becoming darker (because more transparent) than the green subdorsal areas, until the level of the spiracles, where there is a greenish-white longitudinal band with a jagged upper edge; below this band and beneath, is very pale green, with a pinkish suffusion above each leg. The piliferous tubercles just above the spiracles are darkened, and on the last two segments they are all dark, the dorsal ones variegated with whitish. Head pale ochreous, marbled with brown Legs all pale. A variety has the sides and the ventral surface between the abdominal legs strongly suffused with pink.

The moths bred from these larvæ (emerging from August 6th on) are of two types, identical in markings, but differing in color. One type, identified by Dr. H. G. Dyar as *Evergestis funalis*, has the markings on the upper wings strong and blackish. The other has them very pale ochreous, quite inconspicuous. From the larvæ I bred a parasite in fair numbers: this was identified by Mr. W. H. Ashmead as *Temelucha* (formerly *Porizon*) *facialis* (Cresson).

On September 4, 1895, the college campus at Mesilla Park was invaded by great numbers of another variable pyralid (*Loxostege similalis*, Gn. det. Dyar), but I did not find the larvæ.

T. D. A. COCKERELL.

MASSING OF COCCINELLIDS.—As a very much belated addition to the notes on this subject, published in the *News*, volumes viii and ix, the following items may be of interest, while their non-entomological source may cause them to be overlooked by the Coleopterologists. In recently reading Sir William Martin Conway's "The Alps from End to End" (Westminster, Archibald Constable & Co , 1895), I found on page 194—"Near the foot of the [Oberaar] glacier were countless lady-birds grouped on stones and even on the ice itself [July 18th];" and on page 207 "The stone-covered Winter glacier, where there were again a quantity of lady-birds on the stones [July 21st]." P. P. CALVERT.

HABITS OF ISCHNURA KELLICOTTI (order Odonata).– (See the NEWS for November, 1898, page 209.) Writing of this species, in a personal letter, its describer, Mr. E. B. Williamson, says: The first male I took I thought was *Enallagma geminata*, which latter species, together with *E. signatum*, was abundant about the lily-pads. At the last I could tell it from *E. geminata* as far as I could see them, either in flight or at rest. In its attacks upon Diptera and in alighting, there was none of the hesitancy and fluttering of the Enallagmas. The *Kellicotti* flew directly from one leaf to another as though they had determined on a new location before deserting their former resting-place. I never saw one at rest on any other location than a flat-floating leaf of the white water-lily. They were quarrelsome neighbors and frequently attacked *E. geminata* and *E. signatum*, though apparently without serious injury. At rest, the abdomen did not lie extended straight as is usual with Enallagmas and *I. verticalis.** They always seemed to stand on the leaves with the abdomen curved [convexly upward]. When a dash was made for a fly and the prey escaped, the disappointed dragonfly would open and close his wings nervously several times, and the abdomen would be drawn into a greater curve I found them at only two places—the west end of Shriner and the west end of Round lakes, Indiana.

SCALES ON APPLE-TREES IN EUROPE —Since the appearance of the San-Jose scale, the attention of European observers has been directed to determine whether the scale insects occurring on their own fruit trees do not lead a similar life Frank and Krüger have regarded certain scales on Tirolese apples as a variety of the San Jose scale, on account of their resemblance, and raised the question whether such species as *Aspidiotus ostreæformis*, *Diaspis piricola* and *Mytilaspis pomorum* attack the fruit itself. The Hungarian entomologist, J. Jablonowski, in an article in Rovartani Lapok (Budapest) for January, 1899, answers that the first and the third of these three do, but that he has not yet found the second-mentioned upon fruit.

COLEOPTERA COLLECTION IN NEW YORK CITY.—At the meeting of the New York Entomological Society, May 17, 1898, Mr. Beutenmüller, curator of insects in the American Museum of Natural History, stated that the Museum's collection of Coleoptera was then being arranged, and he estimated that it contained at least 150,000 specimens.

MOSQUITOES SPREAD DISEASE.—London, Jan. 31.—The Colonial Office has determined to institute an earnest inquiry into the causes of the increase of tropical diseases. The inquiry will have especial reference to the alarming spread of malaria in India and Africa.

Recent research by eminent scientists in all parts of Europe has traced the epidemics to mosquitoes and other insects bred in the marshes and on the shores of rivers and seas. Under the auspices of the Colonial Office the scientists connected with the British Museum are collecting mosquitoes from every part of the world.

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*This is contrary to my recollection of the behavior of the individuals I collected in New Jersey.—PHILIP P. CALVERT.

They have requested missionary societies and pioneer colonization companies to ask their missionaries and agents to assist in the work by sending as many specimens as possible, live bugs being preferred.

The object of the scheme is to classify the various species, in order to distinguish the disease-spreading kinds from such as are comparatively innocuous. After this methods will be devised for a wholesale slaughter of the parasites.—*Philadelphia Press.*

"LET it alone, Willie," said the bad boy's mother. "Don't try to tear it open. It will be a beautful moth next year."

"Mebbe it will. and mebbe it won't," replied the bad boy, proceeding to dissect it. "All co "coons" look alike to me"—*Chicago Tribune.*

ALL friends and correspondents of the lamented Mr. H. G. Hubbard, who have not yet received copies of his papers, "The Insect Guests of the Florida Land Tortoise" (with "Additional Notes," etc.), and "The Ambrosia Beetles of the United States," may obtain such by sending their addresses to the undersigned at the United States Department of Agriculture, Washington, D. C. Various other papers by Mr. Hubbard, mostly published in the Proc. Entomological Society, of Washington, are also still available for distribution. E. A. Schwarz.

ON THE SUDDEN APPEARANCE AND DISAPPEARANCE OF SOME SPECIES OF INSECTS.—Apropos to the several notes in the February number of ENTOMOLOGICAL NEWS, relating to the sudden appearance of some insects in great numbers, where they had before been rarely, if at all, observed, and the equally sudden disappearance of other species, it may be interesting to know of similar phenomena in Ohio. For years I had been trying to rear hymenopterous parasites from *Scolytus rugulosus*, but invariably failed to do so, though other entomologists were seemingly able to accomplish this with little trouble In 1897 several young fruit trees were killed by the experimental use of kerosene, and were later attacked by this beetle These trees were cut in sections and placed in small boxes in the insectary, and during the winter and spring of 1897-8 hundreds of individuals of *Chiroplatys colon*, an English species, previously known in this country, emerged therefrom, whereas before I had not been able to rear a single one. In the fall of 1897 some canes of wild blackberry were taken from a gully near Wooster and placed in the insectary of the Experiment Station. These canes were badlly infested by *Diaspis rosæ*, and from these scale insects there emerged myriads of females of *Arrhenophagus chionaspidis* Aur., while canes from precisely the same spot, brought in in the Fall of 1898, have not given us a single individual, though the *Diaspis* was present in great numbers. In 1896 the Harlequin Cabbage bug, *Murgantia histrionica*, appeared about Wooster and developed in considerable numbers. It was also found both to the north and the south in numbers sufficient to attract attention, but it has not since been observed farther north than fully forty miles south of Wooster until 1898. when it seemed to be working slowly northward again.—F. M. WEBSTER.

ALLORHINA AS A FRUIT PEST.—With reference to the note on p. 43 it may be well to state that the Arizona species is *A. mutabilis*, not *A. nitida*. This *A. mutabilis* is a well-known fruit pest in New Mexico and Arizona, as may be seen by reference to *Insect Life* and the reports of the Association of Economic Entomologists.—T. D. A. COCKERELL.

MACHILIS CONJUNCTA, Folsom.- This is to be added to the fauna of the United States. I found it at Dripping Spring, Organ Mountains, New Mexico; it was identified for me by Mr. Folsom himself. The species was originally described from Mexico.—T. D. A. COCKERELL.

PROFESSOR GILLETTE'S NOTE ON ALLORHINA NITIDA LINN AS A FRUIT PEST.—I am sorry that Professor Gillette did not notice my article on *Allorhnia nitida* in Bulletin No. 10, New Series, of the Division of Entomology, published in January, 1898, pp. 20-26. If he had done so he would have seen that the insect which damages fruit at Phœnix, Ariz., was probably *Allorhina mutabilis* and not *Allorhina nitida* He would further have noticed that damage to fruit by *Allorhina mutabilis* has been a matter of record for several years, and, further, that similar damage to fruit by *Allorhina nitida* is also well known.—L. O. HOWARD.

PRESERVATION OF LARVÆ.—Prof. Packard and Mr. C. V. Riley both mention various methods of preserving larvæ, but I find the following to be the cheapest, simplest and least dangerous of all:

Drop the larvæ as soon as collected into a pint or quart jar of 2 per cent formalin solution. Date the same and let it stand for a week. Remove the larvæ, putting several of each species into a 6 or 8 dr. "shell bottle," filling with fresh 2 per cent. formalin Soak all corks in parafin and keep bottles upright. I have had especially fine results with light green Sphingidæ and Bombycidæ, which have remained in perfect condition since July, 1897.

Live pupæ may be injected and placed in the same bottles, making an inexpensive but beautiful collection.

I have several Sphingidæ in the original leaf, covered with ichneumon in all stages of development.

Some writers advise boiling specimens, but this I have never tried. Should be pleased to hear from others on this subject.

C ABBOTT DAVIS, B. S., Providence, R. I.

CALLIDRYAS EUBULE IN MIGRATION.—The account of a migration of *Callidryas eubule*, communicated by Mr. Lancaster Thomas to the Entomological Section of the Academy of Natural Sciences, and briefly presented in ENTOMOLOGICAL NEWS (x, 21), recalls some observations made upon the same species in the autumn of 1894. These observations demonstrated in a remarkable way the existence of a phase of insect migration hitherto seldom recognized—the tendency of the migrants, when their number is not excessive, to proceed in Indian file over long distances.

The migration in question passed through the village of Guilford, Conn., near the shore of Long Island Sound, in the course of three days, September 22, 23 and 24. It was carefully studied by Mr. H. C. Dudley, Mr. E. G. Dudley and myself, with the valuable cooperation of several friends living in the town. Throughout the period the wind blew from the south, and the butterflies journeyed southwest, with swift and steady flight, for the most part in one distinct, unwavering line. During one day only (September 23) a second line of flight was detected, parallel to the first and half a mile farther inland.

The main path of the migration passed through gardens and farms, over marshes and streams; obstacles were avoided by rising into the air, with scarcely any lateral deviation, while in open country an elevation of some five feet was maintained. On the first and second days the flight began at about 9 a. m. and lasted until about 5 p. m.; on the third it began at 11 a. m. and ceased altogether in the middle of the afternoon. During the first day individual migrants passed the point of observation at intervals ranging from five to ten minutes; thereafter the average interval tended to increase

Few of the migrants were captured, it being considered of primary importance to watch their flight. The males appeared to be about twice as numerous as the females, and all were somewhat worn, though not to such an extent as might have been expected. When struck with the frame of the net, but not secured (three cases), the insects darted to one side, and sought temporary retreats in clusters of leaves, or fruits whose color harmonized with their own. Their quick perception of occasional yellow patches amid the prevailing green of the vegetation was significant.

Before, during and after the migration many lazy stragglers of the same species were found among the flower beds of the village. They showed no tendency to follow their more active brethren, but lingered behind until too weak and battered for lengthy flight. One elderly lady was able to capture seven of them in her fingers.

Whence the migration proceeded is an unsolved question; doubtless in some favored locality to the northeast these persistent invaders from the South had maintained themselves for a short time, only to be forced to retreat, like many a generation of their ancestors, before the early frosts. The recent abundance of fresh specimens of *eubule* at Nonquitt, on the Massachusetts coast (Psyche, vol. 8, p. 299), is an example of the way in which this species has repeatedly sought to extend its range into New England, and may have terminated in another homeward pilgrimage.

Lastly, by what means the migrants were enabled to follow one another so unerringly upon their journey we have no means of learning. A possible clue to the situation lies in the fact that both sexes of *eubule* exhale a faint odor, which has been compared to the fragrance of violets. If we assume that from hour to hour, nay even from day to day, sufficient of this fleeting perfume lingered in the air to show the way to succeeding butterflies, then we are confronted by a wonderful phenomenon indeed.

WILLIAM L. W. FIELD, Milton, Mass.

THE NEW PEACH MITE.—Prof. Johnson's note in December ENTOMOLOGICAL NEWS and Prof. Webster's in January remind me that it may be interesting to note that the peach mite, to which Mr, Johnson refers, is quite widely distributed in the United States. It was first pointed out to me by Prof. Waite. After that I found it at the following stations in Florida: "Macclenny, Glen St. Mary, De Funiak, Lake City, and, very recently, at Cocoanut Grove. It also occurrs in the Missouri Botanical Garden on an almond-tree. The effect is the same as in the case of the peach-tree, causing what may be termed a silvering of the leaves. While attending a meeting of the Georgia Horticultural Society I found it at Savannah, in '97, and a year later at Columbus. It occurs also on the peach-trees of the Experiment Station of Georgia, at Experiment, Ga., and at the Iowa Experiment Station, at Ames, Ia. It is also found in Eastern Iowa, at Le Claire. These observantions stretch over a considerable time and likewise over a considerable area. I think the mite may occur in any section where the almond or peach is growing. In Florida it rarely causes any perceptible damage to nursery stock, from the fact that as soon as the rainy season sets in the mite is almost eradicated. As Prof. Johnson is making a study of this mite, I thought it would be interesting to note its occurrence.

Another mite, which seems to belong to this same genus and is possibly the same species, occurs on rose leaves, causing on these a somewhat metallic appearance. P. H. ROLFS.

Entomological Literature.

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in HEAVY-FACED TYPE refer to the journals, as numbered in the following list, in which the papers are published; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

4. The Canadian Entomologist, London, Ont., Jan., '99.—**5.** Psyche, Cambridge, Mass., Feb., '99.—**6.** Journal of New York Entomological Society, Dec., '98.—**7.** U.S. Department of Agriculture, Division of Entomology, Washington; publications of, '98.—**15.** Biologia Centrali Americana, London, part cxlv, Dec. '98.—**21.** The Entomologist's Record, London, Jan. 15, '99.—**36.** Transactions, Entomological Society of London, '98, part 4, Dec. 22.—**38.** Wiener Entomologische Zeitung, xvii, 10, Dec. 31, '98.—**45.** Deutsche Entomologische Zeitschrift. '98, 2, Berlin, Dec.—**55.** Le Naturaliste, Paris, Jan. 15, '99.—**67.** Entomologiske Tidskrift, xix, Stockholm, '98.—**89.** Zoologische Jahrbücher, xii, 1, Jena, Dec. 30, 98.—**100** Verhandlungen, Deutsche Zoologische Gesellschaft, 8te Versammlung, Leipsic, '98.

The General Subject.—Butler, A. G. On some new species of African Pierinæ in the British Museum, with notes on seasonal forms of *Belenois*, **36.**—Dahl, Dr. Apparatus for the quantitative determination of visits to flowers by insects, **100.**—Lameere, A. Notice of Dr. Ernest Candeze, portrait, Annales, Société Entomologique de Belgique, xlii, 12, Brussels, Dec. 26, '98.—Lucas, R., Stadelmann, H., Wandolleck, B., Kolbe, H. J., Verhoeff, C. Scientific works on Entomology during the year 1895. 748 pp. Archiv für Naturgeschichte, lxii, ii, 2. Berlin, Dec., 1898.—Merrifield, F. and others. The coloring of pupæ of *P. machaon* and *P. napi* caused by the exposure to colored surroundings of the larvæ preparing to pupate, **36**, Proceedings.—Nussbaum, M. On parthenogenesis among butterflies, Archiv für Mikroscopische Anatomie liii, 3, Bonn, Dec. 19, '98.—Pauls. On the Experimental Zoological Studies of Dr. M. Standfuss. Societas Entomologica, Zürich-Hottingen, Jan. 1, 99,—Poulton, E. B. [Seasonal dimorphism in the genus *Precis*], **36**, Proceedings.—Saville-Kent, W. The Naturalist in Australia. London: Chapman & Hall, Limited. 1897. 4to. 302 pp. 59 pls., 104 text figs. Chap. ix. Insect Oddities, pp. 252-265.

Economic Entomology.—Anon. Abstracts of recent publications, **7**, Experiment Station Record, x, 5, '99.—Anon. On the San José scale, Wiener Illustrirte Garten Zeitung, Dec., '98.—Benton, F. Bee Keeping, figs., **7**, Farmers' Bulletin No. 59—Blandford, W. F. H. On some Oriental Scolytidæ of economic importance, with descriptions of five new species, **36**.—Dammer, U. The San José scale. Gardener's Chronicle, London, Jan. 14, '99.—Daguin, A. Edible insects of antiquity and of our own days, **55**.—Felt, E. P. Fourteenth Report of the State Entomologist on injurious and other insects of the State of New York. Bulletin of N. Y. State Museum, v, pp. 153-295. Albany, N. Y., Dec., '98.—Fletcher, J. Evidence before the Select Standing Committee of the House of Commons on Agriculture and Colonization. May 1898. Printed by order of Parliament [Ottawa, Canada].—Gillette, C. P. Life-history of the sheep scab-mite, *Psoroptes communis*, **4**.—Grill, C. The [Swedish] State Entomological Institute. 2 pls. [in Swedish], **67**.—Kenyon, F. C. Abstracts of some recent publications, **7**, Experiment Station Record, x, 4.—Lampa, S. [Report of work of the State Entomological Institute, etc., for 1897—in Swedish], **67**.—Marchal, P. *Aspidiotus perniciosus*, or the San José scale of the United States—Bulletin, Société Nationale d'Acclimatation de France, Paris, Sept., '98.—Marlatt, C. L. The principal insect enemies of the grape, **7**, Farmers' Bulletin No. 70.—Motter, M. G. A contribution to the study of the fauna of the grave. A study of one hundred and fifty disinterments, with some additional experimental observations, **6**.—Reuter, E. A serious attack on the apple fruit by *Argyresthia conjugella* Zell. in Europe, **4**.—Sanderson, E. D. Sweet potato insects, figs., Bulletin 59, Maryland Agric. Exper. Station, College Park, Md. Jan., '99.—Smith, J. B. Entomological circulars Nos. 1-20. State of New Jersey. State Board of Agriculture. [Not dated. Leaflets for distribution to farmers, etc.]

Arachnida.—Cambridge, O. P. Arachnida-Araneidea,* pp. 281-8, **15**.—Kraepelin, K. Protest concerning the Linnean species of the genus *Scorpio*, Zoologischer Anzeiger, Leipsic, Dec. 29, '98.—Piersig, R. The Hydrachnidæ of Germany (cont.), 13 pls. Bibliotheca Zoologica, heft 22. v. Stuttgart. Rec'd. Feb. 2, '99.—Schimkewitsch, W. On the development of the alimentary canal in some Arachnida, 3 pls., Travaux, Société Imperiale des Naturalistes, St. Petersbourg, xxix, 2. '98.—Slosson, Mrs. A. T. List of Araneæ taken in Franconia, N. H., **6**.—Strand, E. Revision of the Scandinavian species of the genus *Lycosa* (Latr.) [in Swedish], **67**.

Orthoptera.—Bordage, E. On the localization of the regenerative surfaces in the Phasmidæ (trans.), Annals and Magazine of Natural History, London, Jan., '99.—Burr. M. See Green, E. E.—Green, E. E. Further notes on *Dyscritina* Westw. With an appendix on the species of *Dyscritina* reared by Mr. Green, by M. Burr. 2 pls., **36.**—Morse, A. P. The distribution of the New England locusts, map, **5.**—de Saussure, H. and Pictet, A. Orthoptera,* pp. 417-456, pls. xx-xxii, **15.**—Sharp, D. Account of the Phasmidæ, with notes on the eggs, 3 pls. Zoological Results based on material from New Britain, New Guinea, Loyalty Islands and elsewhere, collected during the years 1895, 1896 and 1897, by Arthur Willey. Part I. Cambridge: at the University Press. 1898. 4to.—Tutt, J. W. Migration and dispersal of insects: Orthoptera, **21.**

Hemiptera.—Champion, G. C. Rhynchota Heteroptera* vol. ii, pp. 177-192, pl. xi, **15.**—Ehrhorn, E. M. Five new, Coccidæ,* **4.**—Fowler, W. W. Rhynchota Homoptera,* vol. ii, pp. 201-216, pl. xiii, **15.**—Parrott, P. J. *Aspidiotus fernaldi* (Ckll.), sub-sp. *cockerelli* sub-sp, nov., figs,* **4.**—Quaintance, A. L. New, or little known, Aleurodidæ, i, 1 pl., **4.**—Webster, F. M. On the relations of a species of ant, *Lasius americanus*, to the peach root louse, *Aphis prunicola*, **4**; Odor of the San José scale, *Aspidiotus perniciosus*, **4.**

Coleoptera.—Born, P. *Ceroglossus dynastes* nov. sp., Verhandlungen kk. zoologisch-botanischen Gesellschaft in Wien, xlviii, **9,** Dec. 23, '98.—Champion, G. C. A list of the Clavicorn Coleoptera of St. Vincent, Grenada, and the Grenadines, **36.**—Cockerell, T. D. A. Life-zones in New Mexico, ii. The zonal distribution of Coleoptera. Bulletin 28, New Mexico College of Agriculture and Mechanic Arts, Mesilla Park, N. M., Dec., '98.—Escherich, K. On the anatomy and biology of *Paussus turcicus*, figs., 2 pls, **89.**—Fletcher, J. The bite of *Otiorhynchus ovatus*, **4.**—Gorham, H. S. Coleoptera,* vol vii, pp. 249-256, **15.**—v. Heyden, L. Catalogue of the Coleoptera of Siberia, including those of the eastern Caspian region, Turcmenia, Turkestan, North-Thibet and the Amur region. Supplements II and III. Herausgegeben von der Deutschen Entomologischen Gesellschaft. Berlin, '98.—Homngren, N. Contribution to the knowledge of the bursa copulatrix in the Elateridæ, 2 pls. [in Swedish], **67.**—Horn, W. On types of Cicindelidæ in some English collections, **45**; Four new Cicindelid species, **45.**—Lea, A. M. Revision of the Australian Curculionidæ belonging to the sub-family Cryptorhynchides, ii, Proceedings, Linnean Society of New South Wales, '98, pt ii, Sydney, Aug 30, '98.—Pic, M. Description of new Coleoptera, **55.**—Schenkling, S. Ten new Cleridæ with remarks on already described species,* **45.**—Walker, J. J. Coleoptera of an old ash-tree, **21.**—Xambeu, Capt, Habits and metamorphoses of insects (Longicornes) (cont.), l'Echange Revue Linnéenne Lyon, Dec., 1897.

Diptera.—Coquillett, D. W. Description of a new *Psilopa*,* **4**.—Mik, J. On the life history of *Rhagoletis cerasi* L., with some remarks on the larvæ and puparia of the Trypetidæ and on the antennæ of the Muscid larvæ, 1 pl., **38**.

Lepidoptera.—Butler, A. G. Notes on the American forms of *Euchloe* Hübn., **4**.—Chapman, T. A. The larva of *Eriocephala allionella*, **36**.—Coquillett, D. W. Descriptions of some Lepidopterous larvæ, **6**.—Druce, H. Lepidoptera Heterocera,* vol. ii, pp 521-536, **15**.—Dyar, H. G. Notes on certain South American Cochlidiidæ and allied families, **6**; The life-histories of the New York slug caterpillars, xvii, 1 pl., **6**.—Fletcher, J. *Papilio ajax* var. *marcellus* in British Columbia, **4**.—Moffat, J. A. A southerner arrested in Canada, **4**.—Nussbaum, M. See the General Subject.—Oudemans, J. T. Butterflies from castrated larvæ, their appearance and behavior, figs., 3 pls., **89**.—Rebel, H. To knowledge of the respiratory organs of aquatic Lepidopterous larvæ, 1 pl., **89**.—Reuter, E. The systematic position of *Pseudopontia*, **21**.—Rippon, R. H. F. Icones Ornithopterorum: A monograph of the Rhopalocerous genus *Ornithoptera*, or bird wing butterflies. Published by the Author. London. Pt. 13. Rec'd Feb. 2. '99.—Skinner, H. A new butterfly from Utah,* **4**.—Smith, H. G. Rhopalocera Exotica, being Illustrations of New, Rare or Unfigured Species of Butterflies. With colored drawings and descriptions. Part 47. Jan., 1899. London: Gurney and Jackson.—Spüler, A. On the recent results of Lepidopterology and the classification of the Tineans, figs., **100**.—Urech, F. Communications on the results of this year's aberrative and "chromatotarachäischen" experiments on species of *Vanessa*, Bulletin. Société Zoologique Suisse, '98 Geneva.

Hymenoptera.—Anon. Mr and Mrs. G. W. Peckham's "On the instincts and habits of the solitary wasps," Revue Scientifique, Paris, Jan. 21, '99.—Cockerell, T. D. A. Postscript on *Perdita*, **5**.—Forel, A. Parabiosis of ants, Archives des Sciences Physiques et Naturelles, ciii, (4), vi, 12. Geneva, Dec. 15, '98.—Kirby, W. F. Marvels of ant life. London: S. W. Partridge & Co. 1898. 12mo. 174 pp, figs.—Konow, F. W. A new system of the Chalastogastra? [A criticism of that lately proposed by W. H. Ashmead.], **38**.—Seurat, L. G. Observations on the genital organs of the Braconidæ, figs., Annales des Sciences Naturelles, Zoologie, (8) vii, 5-6. Paris. Oct., '98; On the formation of the head of the Hymenoptera at the moment of their passing into the nymph stage, Comptes Rendus, l'Academie des Sciences, Paris, Jan. 2, 99.—Strand, E. List of the Hymenoptera of Norway [in Latin], **67**.—Webster, F. M. See Hemiptera.

DOINGS OF SOCIETIES.

A regular meeting of the Newark Entomological Society was held at Turn Hall, Sunday, January 8th, at 4 p. m. President Bischoff presided, ten members present. Mr. Broadwell gave a list of captures made by himself and Mr. Weidt at Boonton, N. J., August 20, 1898, with notes whether rare or common.

Crocota rubicundaria, common locally.
Noctua lubricans, very common at Sugar.
Mamestra legitima, rare at Sugar.
Hadena sputatrix, common at Sugar.
Hadena devastrix, rare at Sugar.
Hadena modica, rare at Sugar.
Perigea xanthioides, common at Sugar.
Hyppa xylinoides, common at Sugar.
Euplexia lucipara, rare at Sugar.
Leucania albilinea, rare at Sugar.
Leucania pseudargyria, common at Sugar.
Orthodes infirma, rare at Sugar.
Pyrophila pyramidoides, very common at Sugar.
Erastria carneola, common at Sugar.
Pararellia bistriaris, rare at Sugar.
Pseudoglossa lubricalis, common at Sugar.
Endropia amœnaria, common in field.
Metrocampa margaritata, rare in field.
Acidalia inductata, common in field.
Boarmia crepesculina, common in field.
Xanthorhoe fluctuata, rare in field.
Phlyctænia tertialis, very common in field.
Pyrausta in sequalis, rare in field.
Pyrausta argyralis, common in field.
Evergestis straminalis, common in field.
Crambus vulvigellus, common in field.

Mr. Angleman remarked that he bred *Hydroecia cataphracta* on wild lettuce.

Mr. Weidt reported the capture of *Hydroecia necopina* at light at Newark.

Donations were made to the Society's collection by Messrs. Brehme, Weidt, Herpers and Seib.

Mr. Broadwell remarked that he took a specimen of *Hypena scabra* from under the bark of a tree December 24, 1898.

Mr. Angelman proposed Mr. Ernest Monnier, who was unanimously elected a member. A. J. WEIDT, Secretary.

At the meeting of the Feldman Collecting Social held January 18, at the residence of Mr. H. W Wenzel, 1523 South Thirteenth street, Philadelphia, ten persons were present. The President, Dr. D. M. Castle, read his annual address, reviewing the origin and progress of the society. Mr. Wenzel recorded the capture, by sifting, of *Apion perminutum*, *Phœnonotum exstriatum* and *Philhydrus consor*, along the New Jersey shore of the Delaware river, opposite Philadelphia.

They had not before been reported from New Jersey. He described the method of sifting for Coleoptera, and spoke of the good results obtained by allowing the *débris* to remain in a warm place for a longer period than is usual with collectors.

Mr. Johnson remarked on several new species of Diptera, and on a number of species not before recorded from New Jersey, which he had collected at the Delaware Water Gap during a few days in July, 1898. Of the Diptera taken during that short period he had so far identified 131 species. He also referred to a recent paper by Stein on the Anthomyiidæ, and stated that many of the new species described therein are no doubt identical with some of Walker's species, whose descriptions had been entirely disregarded by Stein, although they are not always entirely useless for identification. At any rate, the speaker held, Walker's species will retain precedence when his types are restudied

Dr. Skinner suggested that when the type of an unidentified and poorly described species is no longer in existence, it is advisable to decide on a type to be known thereafter as the species in question. He also referred to a species of *Pamphila* from Clementon, N. J., August 3, taken by Mr. Fox, which he had believed to be a new species, but he is now satisfied that it is simply a variety of *P attalus*, a Southern species. Another specimen had been taken by Mr. H. Wenzel, at DaCosta, N. J., July 19. The species had been searched ior subsequently on several occasions, but none others had been found in New Jersey. The speaker possessed a specimen of the variety from Florida. He also recorded the capture ot *Nisoniades ausonius* and *N. petronius* in southern New Jersey, both being new to the State.

The following officers were elected for 1899: President, Dr. D. M. Castle; Vice President, Charles W Johnson; Secretary, William J. Fox; Treasurer, Henry W Wenzel.

At the invitation of Dr. Skinner the social will meet at his residence, 716 North Twentieth street, on March 15th.'

WILLIAM J. FOX, Secretary.

A MEETING of the Entomological section of the Academy of Natural Sciences of Philadelphia was held January 26, 1899 Mr. Philip Laurent, director, presiding; nine persons present The new Director, in taking the chair, said that he appreciated the honor of his election, that he accepted the office and would do what he could to further the interests of the Section. Mr Laurent donated to the collection two males of the Chinese mantid, *Tenodera sinensis* Sauss., taken at Meehan's nursery, Germantown, Philadelphia, in the past season. A notice of the death of Dr. J. A. Lintner was read.

Mr. Laurent stated that he had seen a specimen of *Stagomantis carolina* which had been taken on a wharf in this city. He also exhibited both sexes of *Tenodera sinensis*, and called attention to a noticeable color difference: in the female the upper wing is entirely green, whereas in the male the costal margin only is green. He said there was no doubt that the species had gained a firm foothold in Meehan's nursery and was well established there; in the abdomen of this mantid he had found parasitic worms.

Mr. C. W. Johnson spoke of a class of names in Dipterological literature based on the galls only, the imago and in most cases the larva being unknown. Referring to *Cecidomyia vaccinii* Osten Sacken (Monog. 1, 196, 1862), based on a "cock's comb"-shaped gall on the leaves of the huckleberry (*Vaccinium*) and *Cecidomyia vaccinii* J. B. Smith, which infests the cranberry (N. J. Agric. Expmt. Sta., spec. bull K, Feb. 90). its complete life history described and figured and its generic determination correct; while the imago of C. vaccinii O. Sacken may prove to be a different genus or perhaps belong to another family. Which name should stand? Further discussed by Messrs. Skinner and Calvert for and against Prof. Smith's species, Dr. Calvert insisting that no matter what genus Osten Sacken's species proved to be, his name would have priority and Prof. Smith's name would have to be changed. Mr. Johnson proposes the name *Cecidomyia oxycoccana* for Prof. Smith's species

Dr. P. P. Calvert showed a pair of *Calopteryx apicalis* Burm., taken at Tom's River, New Jersey. in 1889, by Mr. L. Riederer of New York City, the interest of this locality (not previously recorded) being that, although Burmeister's types are said to have come from Philadelphia, the species has not been taken near there for many years. He also showed an immature Coleopterous larva stated to have come from the bed of a consumptive patient; it was of a species of *Tenebroides* and probably came from the bed-filling.

Mr. Howard A. Snyder, of Hermit Lane, Roxborough, Philadelphia, was elected an Associate of the Section.

HENRY SKINNER, M. D
Recorder.

OBITUARY.

"Our poor friend, HENRY GUERNSEY HUBBARD, died here yesterday, January 18, 1899, at 11 o'clock p. m."—signed E. A. Schwarz, and dated at Crescent City, Florida.

This brief note marks the passing of an Entomologist who deserves much more than a casual notice because of his pre-eminence as a scientific collector, particularly of Coleoptera, and of the influence which in a quiet way he exerted upon the condition of our American collections.

Mr. Hubbard was born May 6, 1850, and was thus less than forty-nine years old at the time of his death. He entered Harvard in 1869, graduated in due course in 1873, and continued his Entomological studies with Dr. Hagen during the summer of that year. Mr. G.

R. Crotch was at that time working at Cambridge, as was also Mr. E. A Schwarz, who became his instructor in methods of collecting.

During the winter of 1873-4 Messrs. Hubbard and Schwarz systematically investigated the hibernating quarters of the Coleoptera near Cambridge, turning up species theretofore undreamed of, in utterly unheard of numbers. Mr. Hubbard's share of this became the property of the Cambridge Museum, and is known as the "Winter Collection."

The friendship formed between Messrs. Hubbard and Schwarz during this period was based upon mutual esteem and admiration on the part of each of qualities not possessed by the other, and it lasted without break to Mr. Hubbard's death.

In the summer of 1874 they collected near Detroit, Mich., which was Mr. Hubbard's home, and at this time the Detroit Scientific Association was organized, with the view of getting up a local collection of Natural History and other specimens in time for the meeting of the A. A. A. S., which was to be held in 1875.

During the winter of 1874-5 Mr. Hubbard collected in Florida, returning in time to get all the material in shape before the meeting of the American Association, then under the presidency of Dr. John L. Leconte An unusual number of the working entomologists of the country attended this meeting, of whom Dr. Leconte and the Messrs. Grote, Lintner, Osten-Sacken and Riley, became the guests of Mr. Bela Hubbard, the father of Mr. H. G. Hubbard.

The little outbuilding in the Hubbard grounds, containing the collection of insects, immediately became a centre of interest, the material there stored being unparalleled for wealth of specimens and with so many new forms that Dr. Leconte declared that it made it necessary to re-write part of his "Classification." Here was formed that personal friendship with Dr. Leconte which lasted to the death of the latter, and no better correspondents did Dr. Leconte ever have than the Messrs. Hubbard and Schwarz

In 1876-77 our collectors investigated the Lake Superior region, and made the phenomenal collection which formed the basis of the paper published by Dr. Leconte, in April, 1878.

In 1879 Mr. Hubbard was engaged as the naturalist of the State Geological Survey of Kentucky, under Prof. Shaler, and among other matters explored the Mammoth Cave, making known its peculiar fauna of blind insects.

Becoming possessed of a piece of land near Crescent City, Florida, in 1880, he devoted himself for a time to the horticultural interests of that State, continuing indeed to the time of his death.

In 1881 he was engaged as a special agent for the Division of Entomology by Dr. C V. Riley, working first on cotton insects, and afterward on those injurious to the orange; the results of the latter study being published as a bulletin of the department in 1885. It was in the course of this work that he discovered and perfected a practical method of emulsifying kerosene so as to allow its dilution with water for insecticide purposes.

The semi-tropical region of Florida had always interested him greatly, and this be outlined in 1885, paving the way for the rich finds made by Mr. Schwarz a few years later

Always on the look-out for unusual faunas, that of the Hot Springs in the Yellowstone Park was studied in 1890 and 1891, and a year later a trip through the northwest with Mr. Schwarz, yielded accumulations which have not been even yet reported upon.

The burrows made by the Florida Land Tortoise or "Gopher" were investigated in 1895 and an altogether new fauna was there discovered. A new visit to the Lake Superior region in 1896 resulted in an admirable study of a Coccid infesting the Birch, and this was followed in 1896 by a study of the "Ambrosia" beetles, opportunity for which was given by the enormous increase of these beetles in the dead and dying trees, killed or seriously injured by the "great freeze," which caused a loss to Mr Hubbard and other orange growers of many thousands of dollars.

In 1896 the pulmonary consumption from which he suffered had made such inroads that Mr. Hubbard was compelled to spend the winter in southwestern Arizona, where he immediately began an investigation into the fauna of that region and discovered an unsuspected mine in the giant cactus.

In 1897-98 he was joined by Mr. Schwarz, and the material gathered is now in process of arrangement. The letters written by Mr. Hubbard describing his method of collecting this characteristic fauna will be published in connection with the descriptions of the numerous new forms that were turned up

Personally, Mr. Hubbard was a gentleman in all that that term implies, and his most notable character was his unselfishness Scientifically he had a genius for investigation. A pupil of Mr. Schwarz in methods of collecting, he soon equalled his master, while in getting at the really characteristic fauna of a region he was unexcelled.

He was as neat in preparing as he was thorough in collecting, and insisted on well-mounted, clean and properly labelled material. It is due to Hubbard and Schwarz that the importance of exact localities and dates of capture have become gradually appreciated.

The loss to American Entomology is heavy, and I know of none fitted to fill the place left vacant by him. J B. SMITH.

PROF ACHILLE COSTA. Professor of Zoology in the University of Naples, died in Rome, November 18, 1898. He was born in Lecce, August 10, 1823. He wrote extensively upon Italian insects, especially the Hymenoptera, personally exploring the Neapolitan provinces and the Island of Sardinia. The entomological results of these researches are embraced in his memoirs on the "Fauna del Regno di Napoli," and on the "Geo-fauna Sarda" A translation of some notes on the entomological collections at Naples, which he kindly furnished for the NEWS were published in volume vii, page 290 A brief notice of his life is given by Sign. A. Della Valle in the "Rendiconto" of the Naples Academy for December, 1898.

HENRY G. HUBBARD.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

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LETTERS FROM THE SOUTHWEST.

By H. G. HUBBARD,*

The Home of Dinapate wrightii Horn.

PALM SPRINGS, CALA., February 8, 1897.

I have just returned this afternoon from a visit to Palm cañon and am somewhat sore and tired from contact with the saddle and also from my frantic exertions to find a specimen of *Dinapate wrightii.* The Washingtonia palms (*Neowashingtonia filifera*) in this small cañon are few in number, several hundreds perhaps strung along in a straggling line and most of them burned by the Indians who set fire to the fans as a smoke offering to their dead. There are very few young palms, as the freshets wash away most of the seed. However there are occasional clumps of not very old plants on the higher benches and these are sheathed with immense accumulations of dead fans. Every part of this tree is so huge and tough that I, with my small hatchet, can make but little impression upon it. Even to cut through one of the handles of the dead leaves is almost beyond my strength, and where there are accumulations of leaves upon the ground, the long handles armed with knife-like points are so interwoven, that it is a severe task to overturn them. I found no living specimen of *Dinapate* in any stage, but I uncovered a dead and disintegrated specimen of this gigantic Bostrychid beetle lying between dead fans at the foot of a young palm. Many of the old palms are uprooted by the flood waters, and I saw probably 50 of these prostrate trunks upon the ground. Almost all of them are perforated all over, with round open holes, into most of which I can insert the end of my thumb. Some of the holes will however only admit the little finger. These holes evidently made by *Dinapate* larvæ open directly into a huge pupa chamber which is two inches long and lies vertically with the grain not more than one or two inches from the surface. The remainder of the gallery is solidly packed with sawdust and leads into such a labyrinth of borings into the interior that most of the attacked logs are completely riddled, and at the heart there is very little of the original texture left. So solid is the sawdust, however, that these bored logs hardly lose any of their strength and, in fact, are used as gate posts at several of the ranches and at the hotel at the Springs, where the people think the holes are *made* by carpenter bees (Xylocopa). It is very certain that a log once vacated by a colony of *Dinapate* is never afterwards entered or again attacked by them. I should say that most of the logs showed from 100 to 250 exit holes of the beetle, and, at the time of emergence, the person lucky enough to discover such a colony would find no difficulty in filling several Mason jars with the beetles. Of course, until they begin to emerge, there is no sign upon the outside of the presence of the insects within a palm trunk. I could find no trace of the living larvæ and heard no sound of them in unperforated logs.

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* [These letters were addressed to the undersigned at Washington, D. C., and are now, after the death of the author, published without any alterations.—E. A. SCHWARZ.]

Dr. Murray, the landlord of this little hotel, tells me that Mr. Wright comes almost every year in September to this place and always goes without a word up the cañon, so that no one here has ever heard of the existence of *Dinapate*. I could easily trace the operations of Mr. Wright among the fallen palm trunks. He has even cut down a number of the largest and tallest trees, no doubt in the hope of attracting the beetles to the fresh cut timber. But these logs lay upon the ground untouched except for the marks of Mr. W. are where he has subseqently cut into them, in the vain search for live beetles. I would almost suspect that they had become extinct here if it were not for my discovery of a dead specimen, which from its position between leaves still attached to the tree, could not have been there much over a year and probably not many months.

Several logs, which Mr. W. has laid open to the heart, gave me an excellent chance of examining the old borings of the beetle, and I found some dead larvæ and always, in each gallery examined, the pair of great jaws and the clypeus of the larva packed in the sawdust at the bottom of what was the pupa cell.

I think, from my own observations and the evidently fruitless visits of Mr. Wright, that colonies of the beetle are rare and very hard to find. This is probably its northern limit, but in Baja California it may possibly be more abundant.

PALM SPRINGS, CALA., February 27, 1897.

I have searched far and wide for a living brood of *Dinapate*, as I have made an arrangement with Dr. Murray to secure the beetles later on in the season in case I find a colony of the larvæ. With this object I explored Andreas cañon on the 16th but did not go far enough and found only a few vigorous young trees. On the 24th I again visited this cañon, but did not reach the best part of it, being stopped by precipitous side walls and by the stream, which is now swollen to a dangerous torrent by heavy snows in the San Jacinto Mts. The bottom of these small cañons is always nearly impassable by reason of huge bowlders and tangles of grape vines, mesquite cat's claw acacias together with, in the case of Andreas cañon, thickets of quite large Alder trees, Cottonwoods, Sycamores and piles of dead brush from the same, through which there is no forcing a passage. It is necessary to make one's way along the steep slopes, often 200 feet above the valley, and often to cross over and ascend the other wall in order to pass some vertical face of rocks. All this takes time and strength. I found however in Andreas cañon a thorax of *Dinapate*, in a pile of stream drift, showing that the beetle occurs there. I finally left the main cañon and crawled over a divide into a still smaller valley, also very difficult, but within half a mile I found a group of seven of the most magnificent palms, 70 to 80 feet high, and clothed with dead fans from foot to crown so that they looked like huge towers. It is the first time I have seen this magnificent tree in full size and with all the fans still clinging to it. It seems almost beyond the strength of man to penetrate these dense coverings of dead fans which cover the trunks 8 or 10 feet thick on every side so that the diameter of the covered trunk is often 20 feet. I found in this little side cañon among the group of living palms a single huge dead fallen trunk which had lain prostrate many years and had been covered up with grape vines and leaves of the cottonwoods. This trunk was so entirely disintegrated that I was able to pull it away in pieces with my hands. It was bored in every direction with *Dinapate* galleries, and I had at last the good fortune to find, still in its pupa cell, a dead specimen of the beetle, the chitin of which was still perfect, but every ligament dissolved away so that the different sclerites adhered loosely in the surrounding sawdust. I found the specimen to be a male and preserved two small curiously twisted chitinous claspers which were within the abdomen.

Yesterday accompanied by an Indian I visited again Palm cañon and made straight for a certain palm tree which I had observed on my first visit, but too late in the day for a close examination. This is a young tree, not over 20 feet high, and still retains its clothing of fans. It is dead but the bud leaves are still in place. It has evidently been killed by something, and I cannot help suspecting that this has been done by the females of *Dinapate* before depositing their eggs. No *living* tree is ever attacked by them, nor do they enter any trunk that has been long dead or fallen or cut down. I suspect that the female cannot deposit her eggs in any trunk deprived of leaf bases.

In this young palm examined by me the trunk was of very large diameter, and the first chips we removed with our axes showed galleries of *Dinapate* of full size and filled with frass quite fresh and light in color, together with evidently much older galleries of smaller size in which the frass had turned dark with age. I found some of the small borings at their beginning under the fibres of the leaf bases, where they were not larger than a friction match. We finally uncovered a living larva of *Dinapate*, full-grown and apparently forming its pupa cell or preparing to do so. After several hours' work we secured four specimens only one of which could be taken out uninjured, the other three specimens being more or less cut to pieces or crushed between the tough fibres. All these larvæ were thoroughly dormant and very flaccid; evidently they had eaten nothing for some months.

I feel sure that they are more than one year and probably more than two years old, but no doubt they would have issued by July or August of this year. All the larvæ in this trunk appear to lie not deeper than one or two inches beneath the surface of the wood. It is possible however, that they may not issue until next year, and for this reason I hesitate to have the tree cut down. The fibres of the wood are still moist and very light in color showing very slight fermentation except where the juvenile galleries of a year or two ago have penetrated. There are no young larvæ, and evidently all are of the same age and nearly or quite adult, and there are no exit holes in the tree. There may be 50 to 100 larvæ in the trunk, but of course this is only a surmise. Dr. Murray promises to watch the tree during the summer and will try to secure specimens of the beetle as they emerge.

I feel quite certain now that there are comparatively few broods of *Dinapate* existing in this region, and unless it exists also in Baja California or on the southern slope of the San Bernardino range, any year may witness its complete extinction; because unless the females, in imago, feed upon and kill the buds of living palms in which they then oviposit, the number of trees in fit condition to rear the young is exceedingly limited. I have in fact seen but this one tree in any of the cañons I have visited. It is absolutely certain that only the Washingtonia palm is capable of supporting the large broods of this gigantic borer, and if the females should fail to find a suitable tree in any year, they must inevitably perish without issue. When I consider the limited number of these trees in existence in a wild state, and the slender chance the female beetle must have of finding a dying tree in the right condition and at the right time, I am more than ever inclined to suspect that the beetles deliberately kill the tree in which they oviposit. If they killed the tree merely by feeding as adults upon the buds, there would be many trees killed; for often more than 200 adults issue from a single infested trunk. In the case of the tree I have examined, it is probably not the presence of the larvæ that have killed it as they have not apparently penetrated deeply into the interior and their galleries are not sufficiently numerous to seriously impede the circulation of the sap, even in the outer portion of the trunk.

I feel highly elated at having discovered a living brood, and I think there is no doubt that Dr. Murray will be able to secure living specimens of the imago. It is so difficult to cut out large or small chunks of the wood without injuring the larvæ that I have not thought it advisable to secure any in this way.

PALM SPRINGS, CALA., March 13, 1897.

On March 5 I made a serious expedition with a wagon and mules and an Indian to help, to Palm cañon where I spent the day getting out more pieces of palm wood containing *Dinapate* larvæ. I secured four pieces weighing each from 2 or 3 to 6 or 8 ℔s., and each containieg one or two living larvæ. The largest piece undoubtedly contains several of the larvæ. These pieces I now have in my bedroom and I can occasionally hear the larvæ cutting the fibre with a snap like a pair of shears.

I discovered much to my surprise that the interior of the palm trunk is entirely filled with galleries. I had before concluded that all the work had been done nearer the surface, the trunk being an extra thick one. I find however that this trunk like all the rest, has the interior entirely riddled with burrows and very little solid wood left by the larvæ. Many of the larvæ are still in the interior, although some of them are already forming cells near the exterior. We cut into a great many of the grubs in getting out these chunks of wood, and I secured several good additional specimens in alcohol.

It is hard to realize the enormous extent and dimensions of the *Dinapate* galleries. Not the largest of our Florida palmettos could support more than three or four of these larvæ; they would eat it all up and then die of starvation. If there are 20 or 30 holes in one of the Washingtonia palms, one finds the interior entirely eaten out from end to end, and one can follow the galleries, over one inch in diameter for 20 feet up and down the trunk following the grain and without diminishing sensibly in diameter. Then think of the yards and yards of smaller galleries made by the larva while still young. Such extensive and prodigious borings cannot be made in one or two years, and certainly not in any tree trunk of moderate size. There is certainly no other plant here than this Washingtonia palm that is capable of supporting a brood of these huge and voracious grubs. Therefore, I do not hesitate to assert that they exist only in the Washingtonia, and that they are very certain soon to become extinct. I regard the discovery of a colony as one of the most interesting entomological events of my life and I can assure you that if we breed the imagos this year from this trunk, they will not soon be duplicated by others.

There are some thousands of the trees left, but they are in small groups scattered miles apart in a few of the most inaccessible cañons of the San Jacinto range. Here the beetles are nearly extinct, but it is possible that in Baja California they may survive a few centuries longer. In times past they were abundant here, as evidenced by the numerous old trunks riddled with their burrows. But the trunks that have fallen in recent years are all free from their attacks, and as the Indians have burned all the trees that are accessible, so that their trunks are now bare of fronds, it must be now quite difficult for the female beetle to find a fit receptacle for her eggs. I am sure now that they do not oviposit in bare trunks or in healthy trees, although it is possible that the beetles kill the tree in which they ovipost their eggs.*

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* [Subsequently, in June, Mr. Hubbard forwarded to Washington the pieces of palm wood ; and, after some unforeseen accidents and misfortunes, a small number of imago beetles were bred from the wood at the Department of Agriculture during the latter part of August. In October, 1897, Mr. Hubbard received a letter from Dr. Murray, of Palm Springs, stating that, owing to the excessive heat in August, he had been unable to visit Palm cañon, and that, for the same reason, none of his Indians had been willing to undertake the trip. The imago and larva of *Dinapate* have been described and figured by the late Dr G. H. Horn (Trans. Amer. Ent. Soc., 13, 1886, pp 1-4, plate I). While at San Diego, Cala., Mr. Hubbard ascertained that the type locality of *Dinapate wrightii* is Palm Springs, Cala., and not the Mojave Desert, as stated by Dr. Horn The full-grown larvæ collected by Mr Hubbard are fully twice larger than that figured by Dr. Horn. Mr. W. G. Wright, the discoverer of Dinapate, has, as far as known to me, never published anything on the food-plant or habits of this remarkable species.—E. A. S.]

REMARKS ON EMPOASCA (Hemiptera).

By C. F. Baker.

The following remarks are called forth by Mr. Gillette's treatment of this genus in his late paper on the tribe *Typhlocybini* (Proc. Nat. Mus., XX). My statements are based on the examination of a larger amount of American material than has previously been accessible to any one person. First of all I have examined the types of all Mr. Gillette's species. My own collection, the largest of American species in existence, contains most of the species in generous series, all but one being represented (and this, *pergandei*, of doubtful validity).

I know that it is easier to pull down than to build up, and appreciate very fully the difficulties arising in the study of *Empoasca*. The attempt is not made herein to finally settle the question. This paper may be considered simply a contribution to our knowledge of what constitutes a species in *Empoasca*. There is good reason to believe that Mr. Gillette's separation of his various "species" is highly artificial, and that in many cases his distinctions are based on individual instead of on specific characters.

The species of this genus arrange themselves naturally in two groups:

I. Those having the vertex very broadly rounded apically, not even sub-angulate, rarely slightly longer at middle than at eyes; third apical cell of elytra usually sub-linear, its base more nearly *bi*-angled; including the larger green, yellow or smoky species of the genus.

II. Those having a distinctly angulated vertex, though often very obtusely so, and sometimes not longer at middle than at eyes, this being due to the fore margin being paralleled by the anterior pronotal margin; third apical cell of elytra usually more or less strongly widened apically, its base distinctly *tri*-angled; including the smaller species of the genus, which are often vari-colored.

Mr. Gillette had this same idea when he first planned his "Analytical Key," to my certain knowledge. But he does not follow it out. Instead, he breaks up the continuity of the first group by introducing *nigra*, *pulchella*, *splendida*, *albolinea* and *atrolabes*. I have examined the types and many other specimens of these species. To me the vertex appears subangulate and the other characters those of group II. Even superficially they show a far closer relationship with the species cited under group II than with *smaragdula* and its allies.

In a study of the characters of *Empoasca* it is an exceedingly difficult matter to eliminate all possibilities of error in observation. Possible errors may be attributed to two causes, (1) malformation produced by drying, and (2) optical illusions due to varying position of parts.

Among the Typhlocybids we find insects almost as delicate and frail as some of the Capsids. The great delicacy of the body walls renders the proper preparation of specimens a very difficult matter. When mature specimens are selected and prepared with great care, the distortion caused by drying is reduced to a minimum ; but as in the case of Aphida and the little yellow and green culicid-like flies that fly about our lamps, an examination of fresh, undried material is almost imperative. I know from observation that drying produces marked changes in the form of vertex and face, and the usual collapsing of the abdomen throws the genital organs out of their natural position.

With the parts thus distorted errors are still more likely to occur in viewing various details under the microscope. Even under ordinary circumstances there is the widest chance for error (and this is true of many other Homoptera). In focusing a half or two-thirds objective on a convex vertex the proper reading of the width can be readily made, but a very slight change in the angle of the long axis of the body or in the focusing will produce differences of specific or even sectional value. The same is true of the face. Unless the point of the vertex and the tip of the clypeus are equi-distant from the lens, an error in the reading of the lens will surely be made.

No part is more difficult to study than the last ventral segment. Collapse of the abdomen frequently throws it out almost perpendicular to the body axis. It assumes something of this form when the ovipositor is in use. There is but one accurate point of view, and this is obtained when the base of the segment and its apex are equi-distant from the lens. This is a view rarely obtainable on the specimen as ordinarily mounted. The errors resulting are obvious. To illustrate, try the following experiment: Hold a sheet of ordinary note paper before the eyes, flat surface parallel to the face, but slightly bent, as the last ventral segment usually is over the convexity of the venter. Its upper edge, if evenly held, will be truncate. Tip this edge very slightly toward the face and it becomes distinctly incurved; tip it away and it becomes "broadly rounded." Now fold the sheet along the middle line, spread it nearly but not quite to its original position, and repeat the experiment. This represents some very ordinary conditions in the last ventral segments. Tipped very slightly towards the face it becomes deeply angularly emarginate; tipped away it becomes strongly angularly produced at middle, with a concavity on either side. These widely different appearances can all be produced by variations in the position of a rectangular sheet of paper. Now if the sheet be cut into some of the various shapes which the last ventral segment really does assume, and its position varied as above, still more remarkable changes are readily produced. To such causes in part are due several of Mr. Gillette's species, and perhaps the effects observed by Osborn and Ball, and mentioned on p. 737 of Gillette's paper.

Under these circumstances individual variation is greatly accentuated. The necessity of correct observation, then, is of first importance. Next in importance measurements should be made directly from the specimen. Measurements made from camera lucida drawings, especially if the drawings are taken on a flat surface, are very inaccurate, sometimes showing almost a specific difference between the two sides of the drawing. Delicate calipers or an eye-piece micrometer should be used directly.

The forms remaining in group I, as above mentioned, I would arrange as follows:

1. SMARAGDULA, representing the only specific type in the group.
    - a. variety CLYPEATA.
        (*livingstonii*).
    - b. variety AUREOVIRIDIS.
        (*incisa*).
    - c. variety OBTUSA.
        (*pergandei*, *denticula* and *unicolor*).

d. variety TRIFASCIATA.

I am not a "lumper," and so do not believe in the establishing of varieties except where the evidence is very unusual. I have series of hundreds of specimens in this group from various localities, and these are now in the National Museum, where they may be examined by students. I consider color as not of specific value here, and the slight variations (real, *not apparent*) in form of last ventral segment of varietal value only. The color varies from green (*aureoviridis* and *obtusa*) through yellow and brown (*clypeata* to entirely black above (*livingstonii*). The size varies from rather small in *unicolor* to large in *aureoviridis*, which is one of the largest *Typhlocybids* These names represent geographical varieties, ranging from the East (represented by the forms of *obtusa*), through the Rocky Mountain region (represented by the *clypeata* and *aureoviridis* forms) to the Pacific coast (represented by *clypeata* and *livingstonii*). Specimens approaching typical *smaragdula* are found throughout the United States, which is a significant fact. *Trifasciata* is paralleled by *virdii* and a variety of *pura* with smoky marked elytra.

All the species of group II need further study, and I would recommend that entomologists all over the West sweep *Artemisias* especially, thoroughly, and not to pause until they have laid in series of hundreds of specimens of the species found on these and other Western plants.

Atrolabes and *similis* are synonymous with *splendida*, which is a common species in the South. *Similis* is entered in Gillette's table, but I find no description of it in the text. I have seen the types.

The types of *pallida* were collected in 1879 and are totally decolored by their twenty years' experience in collections. I have swept the cotton plant in various parts of the South and have found on it only *Empoasca flavescens* and *Dicraneura unipuncta*. Other than on the color, or rather lack of color, I cannot separate *pallida* from *flavescens* (compare Gillette's descriptions and figures). *Mexicana* and *viridescens* are inseparable in large series, running one into the other.

Mr. Gillette mentions my original specimens, which he agreed with me was *pura*, yet he describes *snowi*, the description of which is very good of the original specimen of *pura*. I have series of *pura* from the far northwest and series from Arizona, which are his *snowi*, and I cannot separate them. Some of the specimens from the northwest have the golden coloration which he mentions and some from Arizona are without it.

The peculiar venation shown in Mr. Gillette's drawing of the elytron of *tumida* is a malformation, most other specimens not showing it.

COLLECTING ON BISCAYNE BAY.

By Annie Trumbull Slosson.

I came to Miami this year on January 9th. The weather was very warm when I arrived, but soon grew cooler. It has been very changeable and uncertain since then. We have had much more rain than is usual at this season and many cold nights. On the whole, the conditions have not been favorable for collecting. During the summer over seven thousand soldiers were encamped here. Their camp occupied the place of a dense hammock of tropical trees and shrubs, which were cut down and cleared away for this purpose. The growth of vegetation in this climate is almost miraculously rapid. The soldiers left here the last of the Summer, and their former camping ground is now a luxuriant tangle of vines, bushes and plants. Among these I have done the greater part of my collecting this season. The custard-apples (*Carica papaya*), from four to ten feet high, are covered with their yellow flowers, which seem very attractive to butterflies. *Catopsilia eubule* and *C. agarithe* are always hovering over the blossoms, the former hardly to be distinguished from the flowers themselves. Masses of a white bur-marigold (*Bidens leucantha*) cover the ground, and around these fly hymenoptera, diptera and the smaller butterflies. A tall, shrubby nightshade (*Solanum verbascifolium*) is now in flower and fruit, too, and attracts many insects. On its greenish white flowers one often sees the odd long-snouted Brenthid, *B. anchorago.* I have taken some thirty or forty specimens on these blossoms. A tiny *Anthonomus* is also found on this plant. I took many last season here, and it is just as common now. It is apparently undescribed—unless West Indian, A large purple convolvulus, the cream-white moonflower, periwinkles both pink and white, a spurge with its deep green leaves oddly marked with blood-red, capsicum, or red pepper, with purple flowers and scarlet berries, these and many more make this jungle a bright and fragrant spot. Among these tropical plants one finds some strangers now which seem quite out of place. Seeds scattered by the soldiers while here have sprung up and tomatoes, melons, squashes, potatoes, Indian corn and other homely though useful wanderers from the kitchen-garden grow here placidly among the brilliant exotics. And the tropical insects accept them calmly and adopt them as food plants. I have found the pretty chrysomelid, *Lema solani*, which have fed hitherto on the wild nightshades here, eating the tomato now, while different insects of the tiny wild gourd (*Melothria pendula*) transfer their affections to its country cousins, the watermelon and squash. Insects are good botanists. The black nightshade (*Solanum nigrum*) is plentiful here, as elsewhere, and has many insects on and about it. The pretty little flea-beetle, *Epitrix parvula*, abounds on this plant. A large Hemipter, a yellowish brown bug, *Spartocera diffusa*, is always found on it, too, while a dainty little "hopper," of brilliant green and black, *Acutalis* sp., lives on the stem and leaves. The handsome day-flying moth, *Syntomeida epilais*, with wings of metallic green, spotted with white, and blue, red-tipped body, is common now among the flowers, while the tiny *S. minima*, its copy in miniature, is occasionally seen, and I have taken one specimen of *S. ipomeæ*, with its brilliant body striped with orange and black. The little melon moth, with white transparent wings bordered with dark brown, has already found out the introduced melons and flies among the vines by hundreds. The large cabbage butterfly, *P. monuste*, its daintier cousin of pearly white, *Tachyris ilaire*, *Terias nicippe*, of deep orange, the striped zebra, *Heliconius charitonius*; the passionflower butterfly, *Agraulis vanillæ;* the richly tinted *Anæa portia*, and, most plentiful of all, the pretty little *Eumenia atala*, called here the "Comptie fly." All these lovely winged creatures know the soldiers' deserted camping ground and visit it in the sunshine. The *Anæa* found here, and which I have distributed under the name of *troglodyta*, is, I am assured, the West Indian *portia* Fab. In life, and for a few hours after death, this butterfly has a delicate bluish bloom over the deep rich red of its wings, entirely absent from the dried insect. I have as yet seen but two shabby specimens of *Timetes eleucha*. I found a pupa under some dock leaves the other day, and from it has just emerged a fine shining golden moth, *Plusia verruca*. I have seen but one specimen of *Composia fidellissima* this season, nor have I seen *Alypia wittfeldii*, so common last winter here around the white bur-marigold.

Skippers (*Hesperidæ*) are fairly numerous, two or three species very common. The little *P. hayhurstii* is everywhere; *Pamphila ethlius* is common, and its odd larvæ are ruining the cannas in the hotel grounds. *Erycides amyntas* is not rare this season. Dr. Dyar discovered its life history here two years ago. Its food plant is Jamaica dogwood (*Piscidia erythrina*), a shrub or small tree of the Leguminosæ. The most common Lycæna, or "little blue," is *L. ammon*. Here, and also at Lake Worth, it is very common, flying all day about flowers in the sunshine. *L. filenus* and *L. theonus*, the latter having the wings of female white faintly shaded with blue, are not rare. But a few specimens of *Thecla acis* have as yet appeared, and I have seen only one *T. martialis*. I have done but little collecting at light this season. The evenings have been too cool or too windy as a general thing. As usual, the chocolate brown sphinx, *Enyo lugubris*, is very common, both at flowers in the twilight and at light, while the lovely green sphingid, *Pergesa thorates*, not yet included in our printed lists, is not uncommon. The larger green *Argeus labruscæ* is occasionally seen, as is also the still larger sphinx, *Pachylia ficus*. One very warm still evening this month thousands of small beetles came swarming to the lights. Hundreds of the little water beetle, *Helochares ochraceus*, came into doors and windows, and many small Scolytids and Longicorns rested on floor of piazza near the electric lights. Last night I took a moth I have never before seen, and which I suppose to be *Halisidota strigosa*. It is a beautiful insect, with crimson abdomen tipped with black and thinly scaled brownish wings, a West Indian species.

(*To be Continued.*)

MIAMI, FLA., February 8th.

NEW SPECIES OF PEMPHUS AND TRAGOSOMA

(Coleoptera).

By Thos. L. Casey.

The tribe Cychrini of the Carabidæ has ever been a favorite with coleopterists, because of the large size and elegant form of the species, although the colors are usually not so brilliant as in Carabus—in fact throughout the entire genus Brennus, excepting *marginatus* and a few allied forms, the species are of an intense black. Pemphus is similar in this respect, the lustre however being invariably dark and not shining as in Brennus. The genera of the books are, in my opinion, valid and not subgenera.

Pemphus Motsch.

The following species belongs near *longipes*, and Mr. Ricksecker, to whom I am indebted for a fine pair, writes me that the habits are similar to those recorded under my description of the latter (Col. Not., VII, p. 339), the motions being rather sluggish and the gait deliberate.

Pemphus opacus, n. sp

Moderately convex, the elytra somewhat ventricose, broadening to about apical third, black throughout and dull in lustre. Head elongate, the eyes small; vertex feebly convex, very slightly wrinkled transversely; antennæ long and slender, the basal joint thicker, claviform, 2.7-3.0 mm. in length. Prothorax apparently very slightly longer than wide, dilated and broadly rounded at the sides distinctly before the middle, the sides sinuate toward base; surface very feebly convex, the side margin moderately reflexed. Elytra about a third longer than wide, nearly two and a half times wider than the prothorax; sides broadly arcuate, the humeri not well marked; surface finely and irregularly punctate throughout, each elytron with two or three discal intervals which are nearly regular; side margins feebly concave, coarsely and unevenly punctate, the reflexed edge smaller than that of the prothorax. Under surface more shining than the upper, the legs long and slender. Length 24.5-27.0 mm.; width 9 5-11.4 mm ; length of head and mandibles 6.0-6.7 mm.; length of hind tibia 9.5-11.0 mm.

California (Sonoma Co.).

The male is smaller and less ventricose than the female and has the anterior tarsi moderately dilated, with the basal joint densely pubescent beneath in distinctly less than apical half.

Since completing my revision of Brennus (l. c., p. 305), I have received a pair of *B. fulleri* Horn, from Mr. Wickham, and find that it must be associated with the *marginatus* group by reason of the fourteen elytral striæ as stated by Dr. Horn. It is abundantly distinct from that species, or any of its allies, however, in general form, and is distinguishable at once from any other of the group by its black coloration; it can in no sense be considered a variety of *marginatus*.

TRAGOSOMA Serv.

Two species of this holarctic genus have previously (Col. Not., II, p. 491) been made known by the writer, making, with the two previously described, four well-characterized species. Two more equally distinct are now added in the following table, which includes also the European form for comparison:

Elytral sculpture uniform throughout, the punctures coarse and subconfluent; fine ridges distinctly traceable to the basal margin; antennæ glabrous.......................................2

Elytral sculpture not uniform, the punctures distinct and widely isolated throughout, becoming much coarser, deep and conspicuous toward base, where the fine subcostiform lines become obsolete in about basal third; antennæ pubescent...............6

2—Anterior tarsi rather strongly dilated in the male; prothorax nearly twice as wide as the head and conspicuously hairy......3

Anterior tarsi narrow and very feebly dilated in the male; prothorax small, only slightly wider than the head, very broadly and feebly rounded at the sides, with the process slender, abrupt and spiculiform...5

3—Sides of the prothorax acutely triangular between the apical and basal angles, with the sides of the angle nearly straight and the lateral process anguliform, broadening continuously from its apex Northern United States and Canada........HARRISI Lec.

Sides of the prothorax broadly rounded, with the process spiculiform and abruptly projecting from the arcuate limb...........4

4—Elytra about twice as long as wide, the side margins rather widely and very distinctly reflexed. Europe...........DEPSARIA Linn.

Elytra more than twice as long as wide, the lateral edges extremely narrowly reflexed; body brown in color, shining, the antennæ very slender and paler; prothorax strongly and closely, but evenly punctured and shining, conspicuously clothed with long, erect, fulvous hair; elytra glabrous. Length 26.0-28.0 mm. width 9.6 mm. Colorado........................SODALIS, n. sp.

5—Pronotum rather finely punctate and conspicuously hairy, deeply and transversely impressed throughout along the apical margin; antennæ relatively a little thicker than in the group with more dilated tarsi; in general color, lustre and sculpture very similar to *sodalis*, the body smaller. Length 24.8 mm; width 8.0 mm

Utah (southwestern)—Mr. Weidt............PARVICOLLIS, n sp.

Pronotum very coarsely punctate and glabrous or very nearly so, the surface not deeply impressed along the apical margin, at least toward the middle; antennæ much stouter, darker in color than in any other species. New Mexico.........SPICULUM Csy.

6—Prothorax large, transverse, the lateral process long, slender, finely aciculate and abruptly formed, the surface unusually convex longitudinally, very coarsely and somewhat sparsely punctate and glabrous, with short erect hairs toward the sides only; antennæ slender and filiform. California (Mt. Diablo).
PILOSICORNIS Csy.

The sexual characters are very feeble in this genus, and there is a strong and persistent similarity of type throughout; the male characters evince themselves, however, in the slightly longer antennæ, with more elongate outer joints and in the rather more dilated tarsi. In *harrisi* there is a large transverse discal area of the pronotum, which is very finely and densely punctate, and of which there is no trace in the female or in the male of *sodalis*. *Pilosicornis* is the most aberrant species of the genus, and is wholly isolated from the other five in many very radical structural characters.

ON THE SMALLEST PYROMORPHID AND ITS LARVA.

By HARRISON G. DYAR.

The smallest known Pyromorphid is the Cuban genus, *Setiodes* H.-S. I have met with a form of this in the Bahamas, which I describe herewith:

Genus SETIODES H. S.

1866—**Setiodes** Herrich-Schäffer, Corr.—Blatt min. zool. ver. Regensb., xx 106.

1867—**Formiculus** Grote, Proc. Ent. Soc. Phil., vi, 184.

Palpi rudimentary; antennæ pectinate, the terminal pectinations thickened, the whole organ somewhat short and slightly clubbed: legs without spurs; wings very long and narrow, more so than in **Harrisina**, the hind wings especially reduced; fore wings with 11 veins, vein 9 absent, 10 and 11 stalked, the rest arising separately from the cell, which is divided by the distinct discal vein; hind wings with very small internal area, the internal veins all lacking, veins 2 to 7 evenly spaced from the cell, 8 absent, 2 and 3 short and down curved.

The peculiar genus has two species, or local forms, separable as follows;

Hind wing with a white spot; spot of fore wing large...**nana**, H. S.
Hind wing entirely black; spot of fore wing small..**bahamensis**, n. sp.

1. Setiodes nana H. S

This is the Cuban species, redescribed by Grote as *Formiculus pygmœus*. I have the Grote type before me, through the kindness of Dr. Skinner. It shows decidedly the effect of the lapse of time, having lost the abdomen and having been bored through by museum pests, but what is left corresponds evidently with Herrich-Schäffer's very characteristic description. Grote seems to have had only females and Herrich-Schäffer only males.

2. Setiodes bahamensis, n. sp.

Blue black; front, spot below eye, tips of rudimentary palpi, sides of collar, point at base of patagia, points on coxæ, tips of hind femora, bases of middle and hind tibiæ outwardly, a row of minute lateral points on abdomen becoming streaks on the sixth segment and a row of ventral points on the posterior edges of the segments white; fore wing with a small whitish hyaline patch in the end of the cell, divided by the discal vein, the base of cell and submedian interspace more thinly scaled than elsewhere. Hind wing uniformly black. Expanse 15 mm. One male, the last two segments tufted on the sides.

Hab.—Nassau, New Providence, B. W. I. National Museum, type No. 4,167.

Larva.—Flattened as usual in the family, thick and rather square; feet normal; five warts on thorax, four on abdomen, the warts low, simply tufts of short dark hair with three of four long pale ones at the extremities. Centrally the color is bluish white, a dorsal, two subdorsal (one above and one below wart iii) and a subtraventral (below wart iv. and v), straight, narrow, purple-brown lines, connected anteriorly by a transverse band on joint 5; the ends (joints 2 to 4 and and 12 to 13) light red; a conspicuous pale yellowish spot behind wart i. and ii. of joint 12, like a pair of eyes; joints 13 and also 2 to 4 rather broken up by pale spots, but not much contrasting. Head in the hood about 1 mm, wide or a little over. Skin with clear granules; hair smooth, pointed, not bulbous. Length 8 mm.

The larva spun the characteristic white web of flocculent silk which is usual in the species of this family. A moth emerged in four months.

Food plant a species of *Ampelopsis*.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfullyreceive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer for each number three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., APRIL, 1899.

EDITORIAL.

We are very busy people here at the Academy, and we must catch the moments as they fly. We haven't the time to read all the journals that come here; and, in fact, we are not interested in all the subjects of which they treat. However, we do like to look over the journals devoted to entomology, both for our pleasure and profit, as we may wish to jot down a record or two of some interesting new point or other. We don't feel inclined to look through every page of a journal, as that is wasteful of our precious time, but in some cases it is a necessity, especially for the compiler of the literature, as some journals do not publish an index to their contents. After much circumlocution we have arrived at the point. Among onr distinguished contemporaries who merit our dire displeasure in this respect maybe mentioned the "Entomologist's Record and Journal of Variation" and the "Canadian Entomologist." Could one imagine "Psyche" without its table of contents on the cover page? Such a thing is inconceivable and would be like trying to find a paper published by the U. S. Department of Agriculture. At once one's brain would begin to seethe with Old Series, New Series, Special Series and other combinations we can't unravel.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

ALLORHINA NITIDA Linn. As a Fruit Pest. In addition to what Prof. Gillette quotes from one of his correspondents at Phœnix, Ariz , about this insect as a fruit pest in the NEWS for February, I wish to say that *Allorhina nitida* has been very abundant in our Western Maryland peach orchards along the Blue Ridge Mountains during the past season They were conspicuous upon the variety salway in September, and not infrequently from fifty to a hundred were seen clustered upon a peach. We noticed that fruit which had begun to rot upon the tree was especially subject to their attacks They were easily disturbed, and would very often take flight when one approached the tree. I have not seen them attacking the peach in its normal condition; but I have no doubt they would. We have seen from one to five clusters of these beetles upon a tree at a time, and when one is disturbed the others take flight immediately afterward, causing much confusion and buzzing.

W. G. JOHNSON, College Park, Md.

LONG LIFE OF MOSQUITO LARVAE – Vernon L. Kellogg, Stanford University, California.

The normal life of a mosquito wriggler is, for those mosquito species whose life history has been studied, only one or two weeks. *Dr. Howard found the normal life of the wriggler of *Culex pungens*, a mosquito common at Washington, to be seven or eight days. "The length of time," he adds, "which elapses for a generation * * * * * is almost indefinitely enlarged if the weather be cool, * * * * Larvae were watched for twenty days, during which time they did not reach full growth."

Eggs were laid by a mosquito in my laboratory at 4.30 p. m., October 9, 1898. The larvae issued from the eggs on the night of October 10th. I kept these wrigglers in a small jar of water, on my writing table. The direct rays of the sun did not strike the jar, but the laboratory is well lighted, and the wrigglers were in a normal condition as regards light. The temperature of the laboratory during the day time was about 65°-75° F. ; at night, never as low as 32°, F., usually not below 40°-50° F. Occasionally a little water was put into the jar to replace that lost by evaporation. There were 14 larvæ on October 10th, They increased in size very slowly and one after another died. On December 15th there were six larvæ alive, and apparently about full-grown. On December 29th five larvæ were alive; on January 11, 1899, 3 were alive; on January 17th, 2 were alive, and on January 30th there was but one alive. This one lived until February 16th, when it died at the "ripe old age" of four months and a week. No larva pupated.

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* Howard and Marlatt, The Principle Household Insects of the United States, Bull. 4, N. S., Div. of Ent., U. S. Dept., Agriculture, 1896.

Why did no larva pupate? The environment was not abnormal, unless, perhaps, the food supply was scanty. Perhaps the reason lies in the conditions of the "borning" These slow-growing, long-lived, non-pupating wrigglers issued from eggs which were laid by a virgin female. The female issued from its pupal case and almost immediately laid eggs. There was no other mosquito in the jar, and there was certainly no mating. Perhaps parthenogenesis is not unknown among mosquitoes. I do know that it is known. But if all the parthenogenetically produced larvæ fare out their lives as these I have watched did, parthenogenesis among mosquitoes is infanticide.

THE ODONATA OF THE "BIOLOGIA CENTRALI-AMERICANA." - Having recently been asked by Mr. F. D. Godman, of London, to undertake the preparation of the part of this work relating to the Odonata, and having accepted this offer, I desire to make this part as complete as possible. As the "Biologia" aims to embrace all Mexican and Central American species, whether included in the joint collections of Mr. Godman and the late Mr. Salvin or not, I shall be greatly indebted to any persons who will loan me Odonata ("dragonflies," "darning-needles") from those countries for examination, the results of such study to be included in this work. In this connection I will identify unnamed material for a very moderate return in duplicates. As some recent collectors have distributed specimens from that region quite widely, I suggest that any one willing to aid me should write to me before sending the insects and let me know the sources of their material, as. some time, labor and expense may thereby be saved —PHILIP P. CALVERT, Academy of Natural Sciences, 19th and Race Streets, Philadelphia, Pa.

"Go to the ant, thou sluggard!" commanded the Proverb.
Accordingly the Sluggard went to the Ant.
"Go to the devil!" exclaimed the Ant.
"Talk about red tape!" sighed the Sluggard —*Detroit Journal.*

Entomological Literature.

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in HEAVY-FACED TYPE refer to the journals, as numbered in the following list, in which the papers are published; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

4. The Canadian Entomologist, London, Ont., Feb., '99.—**5.** Psyche, Cambridge, Mass., March, '99.—**9.** The Entomologist, London, Feb., '99.—**11.** The Annals and Magazine of Natural History, London, Feb., '99.—**12.** Comptes Rendus, L'Academie des Sciences, Paris, Jan. 23, '99.—**21.** The Entomologist's Record, London, Feb. 15, '99.—**25.** Bolletino dei Musei di Zoologia ed Anatomia Comparata d. R. Universita di Torino, 1898.—**35.** Annales, Société Entomologique de Belgique, Brussels, '99.—**45.** Deutsche Entomologische Zeitschrift, '98, zweites lepidopterologisches Heft, Berlin. Feb. 10, '99.—**61.** Natural Science, London, Feb. '99.—**74.** Naturwissenschaftliche Wochenschrift, Berlin, '99.—**81.** Biologisches Centralblatt, Erlangen, '99.—**84.** Insekten Börse, Leipsic, '99.—**101.** Rovartani Lapok, Budapest, Feb., '99.

The General Subject.—Aigner-Abafi, L. The scientific arrangement of an insect collection [in Hungarian], **101.**—Bordage, E. On the probable mode of formation of the fusion between the femur and trochanter in Arthropods (transl. from French), **11.**—Collin, A. Determination of the date of publication of Linné-Gmelin, Editio XIII Regnum Animale, Pars. vi, Zoologischer Anzeiger, Leipsic, Jan. 16, '99.—Escherich, K. On myrmecophilous Arthropods with especial reference to the biology [life-history], Zoologisches Centralblatt, Leipsic, Jan. 17, '99.—Janet, C. On the mechanism of flight in insects, **12.**—Kerremans, C. Sexual dimorphism, **35**, xlii, 13, Jan. 24.—McClung, C. E. A peculiar nuclear element in the male reproductive cells of insects, figs., Zoological Bulletin, Boston, Feb. '99.—Willey, A. Trophoblast and serosa: a contribution to the morphology of the embryonic membranes of insects, Quarterly Journal of Microscopical Science, London, Jan., 99.

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DOINGS OF SOCIETIES.

A regular meeting of the Chicago Entomological Society was held on Thursday, February 16, 1899, at the Crerar Library. Members present, 12; visitors, 6. Prof. James G. Needham, of Lake Forest University, gave a very interesting talk on the Odonata, their habits and the best method of obtaining specimens for study.

The Society now has over twenty members and more are confidently expected. Good quarters and access to a well stocked library have placed it on a firm footing, and it is contemplated to issue a volume of proceedings in the near future.

A. KWIAT, Sec.

At the February meeting of the Feldman Collecting Social, held at the residence of Mr H. W. Wenzel, 1523 South 13th street, six persons were present.

Mr. Boerner recorded the capture of *Barinus albescens* at Westville, N. J., July 24th. It was not before recorded from so far North.

Mr. H Wenzel reported that he had identified specimens taken by Mr. Boerner at Brigantine Beach, N. J., as *Phlœophagus spadix*, an introduced species.

Mr. Boerner stated the specimens in question had been taken on timber washed up on the beach.

Mr. H. Wenzel also recorded the capture of no less than 100 species of Coleoptera from a bag of material gathered for sifting, on January 28th at Westville, N. J. The bag held about one-half bushel of débris. Eight species of Scydmaenidae were taken, and a specimen of *Conotrachelus cribricollis*, a southern species. Also a specimen of *Olisthopus micans* and six species of *Platynus*.

Mr. Boerner referred to a former communication on the hibernation of *Conotrachelus fissunguis*, and stated he had taken a specimen hibernating on January 22d. WM J. FOX, Secretary.

A REGULAR meeting of the Newark Entomological Society was held Sunday, February 12th, at 4:00 p. m., with President Bischoff in the chair, and ten members present. Mr. Weidt proposed Mr. W. D. Kearfott, who was unanimously elected a member. Mr. S. T. Kemp read the following article on *Saperda lateralis:*

"During the winter of 1897-98 I found in a patch of undergrowth in the neighborhood of Merchantville, N. J., numerous coleopterous larvæ infesting the young shoots of hickory and oak. One species which attracted my attention more than others, on account of the apparent impossibility of collecting the larvæ in their natural abode, proved, on maturity, to be *Saperda lateralis*. I only found them on breaking off the dead shoots of hickory, which appeared to grow out of old stumps of the original trees, cut off or worn away close to the ground. They inhabit these shoots right at the very base of them, and appear to burrow almost laterally and slightly upwards. On breaking off these shoots, which were from one to two inches in diameter, and which, when infested, break clean off easily at the base, the larva becomes almost entirely exposed, sometimes even falling out on to the ground. Not recognizing the species at the time, I visited the same patch about the 1st of May, 1898, and collected a number of them which by this time had pupated in the same situation, and when these matured, towards the end of May, they gave me the information I desired, viz.: the name of the species of larvæ I had been studying. I found, on close examination, that the wood attacked by this borer was invariably a shoot that had been bored during the previous season, and been broken off three or four feet above the ground by the larvæ of Elaphidion parallelum.

"It appeared to me from my observation, that the latter species commences the work of destruction, and that the wood is not in a fit condition to suit the requirements of *Saperda lateralis* until the following season. I found mostly one, sometimes two, and occasionally in the largest shoots three of the larvæ in the same shoot, but always in a separate burrow. The above noted habits of these larvæ may not be of much interest to experienced coleopterists, but may be read with interest by beginners, judging from my personal experience a few years back, and may tend to lead them to closer observation while on their rambles in the country.

S. T. KEMP.

Elizabeth, N. J.

Mr. Kearfott exhibited a series of blown larvæ of the genus *Datana*. Meeting adjourned. A. J. WEIDT, Secretary.

A meeting of the American Entomological Society was held February 23d, Rev. H. C. McCook, D. D., president, in the chair. Dr. Calvert exhibited a Sphinx larva from the collection of the Biological School of the University of Pennsylvania, which was so covered with the cocoons of a parasite as to almost obscure the larva from view. The specimen was found on the red mangrove at Osprey, Florida. The parasites were Braconidæ. Two hundred and fifty larvæ were counted, although there were many more. As high as twelve hundred parasites have been reported from a single larva Dr. Skinner made some remarks on insects in relation to pain and emphasized the fact that the great numbers of progeny produced compensated for pain as a means of protection to life, so necessary in the higher order of animals. Mr. Seiss said he had kept a specimen of *Prionidus cristatus* alive for two months impaled on a pin, and it took its food and ate, for that period, as though nothing were wrong. Dr. McCook mentioned that insects deprived of their abdomens would suck honey or sweet fluids which would enter the mouth and come out the end of the thorax where severed from the abdomen. He also spoke of soldiers during the heat of battle, having severe wounds and suffering little pain. The experience of Livingston, the African traveler, was also related, in which a lion munched his arm and no pain was felt. Dr Skinner made some remarks on the subject of insects as carriers of disease, and especially mentioned the probability of *Musca domestica* carrying the *Bacillus typhosus*, the cause of typhoid or enteric fever. These insects settle on fecal matter, from patients suffering from this disease and then settle on food, and the poison of the disease is carried into the alimentary canal of other persons. The flies foot is admirably adopted for picking up "germs" and carrying them about. The life history of *Musca domestica* has no bearing on this subject, except that they are more numerous where horse manure is plentiful. All latrines in camps should be covered, as diurnal insects avoid dark places. Dr. McCook said he had visited every principal camp in this country and Cuba during the late war and found the flies simply disgusting at times. At Camp Alger, in June, flies swarmed around the mouths of patients suffering from various diseases. In the mess tents of the *officers* it was impossible to eat with any degree of comfort, without an abundant supply of mosquito netting. The president said while in Cuba he was too busy to study insects, but did notice the "cutting ants" while going up the hill to Morro Castle. A black species was climbing up the paths and the cuspidor shaped openings were observed and the ants seen carrying in the little bits of leaves and probably wondering what all the din of battle had been about. At San Juan ridge they were again noticed and around a tree a large formicary of these ants was found. They seem to have the sense of direction remarkably well developed and their burrows, on lines through a rank tropical grass and weeds, run almost as accurately as an engineer runs a straight line for a railroad. At Santiago two handsome species of spiders were observed, which had thrown their webs for forty feet, making a canopy over a path, covered on either side by rich tropical foliage about eight feet in height. These interesting natural scenes were in great contrast to the horrors of war as seen in the hospital near by. The spiders seen were a common *Nephila* sp. and an *Argyroepeira*. The Treasurer reported that the bequest of $5,000 from the late Dr. Geo. H. Horn had been received.

DR. HENRY SKINNER, Secretary.

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OBITUARY.

It is with sorrow I record the death, on February 25th, at Malden, Mass., of my friend and fellow collector, Henry G. White. For the past seventeen years he had been in poor health from what was supposed to be a form of Bright's disease, and two or three times a year would have severe and painful attacks, which would confine him to his bed for weeks at a time. The last and what proved to be fatal attack came upon him in August, since which time he had been unable to leave his room. He suffered greater agony than befalls the lot of most men, but, in spite of his affliction, was always cheerful and contented, and a most indefatigable collector of *lepidoptera*, in which he specialized.

Mr. White was born in Worcester, England, November 25, 1850, and came to this country when eighteen years of age. After spending a few years in Pittsburg, Pa., he traveled extensively through the West and finally returned to the Eastern States, and spent the greater part of his life in or near New York city.

In the spring of 1895 he came to Malden, and for about a year was connected with the Gipsy Moth Commission, but his continued poor health compelled him to resign his position, since which he has devoted himself to collecting insects, rearing larvæ and the many other pleasures which a true lover of nature enjoys while pursuing his favorite hobby; and what a blessing this hobby has been to him, helping to while away the weary hours and bring days of contentment to this poor sufferer.

By profession "Harry" White was a mechanical engineer, by birth and education a gentleman. His was a most generous nature, and often would he give from his own collection to help out a less fortunate friend. If he found a choice collecting ground he wanted all his friends (and all entomologists were his friends) to enjoy it with him. His unselfishness was well illustrated by a remark I once heard him make when remonstrated with for giving so freely from his cabinet. "What are they good for," said he, "except to give away? I cannot take them with me when I die."

We have all of us lost a friend indeed.

He leaves a wife whose untiring devotion helped to prolong his life many years Two brothers survive him, one in Colorado, the other in England, also his mother. HARRY H NEWCOMB.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

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NOTES ON BUTTERFLIES, WITH DESCRIPTIONS OF NEW SPECIES.

By HENRY SKINNER, M. D.

Pamphila scudderi, n. sp. Male. Expands 1½ inch. Superior wings yellow—fulvous, with a darker border, about an one-eighth inch in width; the yellow fulvous runs into this darker color along the nervures; the stigma is long and narrow, and becomes thinner as it approaches the submedian nervure. Inferior wings yellow fulvous; costal margin fuscous; edge of wing fuscous; fringes whitish-yellow. Under side of superiors with a large black patch at the base; remainder nearly immaculate. Inferiors light yellow-fulvous, immaculate.

Female. Expands but slightly more. Superiors darker in color, with a row of yellow spots extending across the wings from the costa to the inner margin; first come three distinct subapical spots, then two small ones further toward the outer margin, and below these one between each two nervures until the inner margin is reached; these spots become larger as the inner margin is approached. Inferiors as in the male. Undersides as in the male. This species is more nearly allied to *napa* Edw. than any other, but is more nearly immaculate both above and below; the stigma is larger and narrower than in *napa*. Described from [a pair sent to me by Dr. S. H. Scudder who has a good series in his collection. They were taken on the White River, Colorado, between July 24th and August 13th.

Pamphila oslari, n. sp. Male expands one and five-sixteenths inches. Upperside: All four wings light fuscous, with an almost obsolete black stigma. Underside: Superiors immaculate, excepting that there is a black basal dash with reddish-yellow color above it. Inferiors hoary—under a lens showing numerous white scales on a dark brown back-ground. This species has a superficial resemblance to *fusca* Grote and Robinson. Described from four males taken in Chimney Gulch, Colorado, by Mr. E. J. Oslar on the 18th of June.

I have received a fresh specimen of *Lycorea cleobœa* var, *atergatis* Doub-Hew, taken January the 19th at Miami, Dade, county, Florida. This specimen was taken by Mr. S. N. Rhoads and adds a rather handsome nymphalid to our fauna. It is a wanderer from further south, being found in Brazil and Central America. From the same locality has been received *Danais berenice strigosa*. *Eudamus tityrus* and *E. zestos* fly together at Miami and neither seem to vary toward the other, and I think it likely that they are distinct species. It has been suggested that *zestos* is a variety of *tityrus*.

A series of specimens of *Eunica tatila* from Miami, Florida, show wonderful variation on the inferiors below, hardly any two specimens being marked alike. *Erycides amaytas* is very abundant at Miami. *Nisoniades petronius* found at this same place has been taken by myself in New Jersey not far from Philadelphia. Specimens of *Pamphila comma catena* Staud. from Switzerland and Norway are absolutely identical with specimens from Laggan, Alberta, which I have labelled *P. comma manitoba* Scudder. If the locality labels were removed it would be impossible to separate them. I now have a large number of the forms of *comma* from many localities. They number 150 specimens. The southernmost locality from whence I have received specimens is Blanco county, Texas. The heretofore almost unknown *Erebia rossii* is common on the Kuskoquim River, Alaska. The specimens of *Papilio troilus* from southern Florida show interesting differences when compared with the specimens found in the North.

Since the description of *Pamphila oslari* was written I have received the following interesting account from its discoverer, Mr. E. J. Oslar, of Denver, Colorado: "*P. oslari* I take in the foot hills, altitude about 8,000 feet in Jefferson county at Chimney Gulch and Clear Creek Canon. I find it sitting on the rocks all the time until disturbed, and then it is gone in an instant, and no eye can trace its flight; but if you exercise a little patience, stand still and wait, it will come to the identical spot again. The color of the insect assimilates to a nicety the rocks on which it sits, with its wings closed, and it takes a practiced eye to detect one while at rest. *Nisoniades martialis* I take at the same time and place and have never seen it anywhere else; it is therefore very local and most difficult to capture. I find them right on the tops of the mountains that rise perpendicular from the canon, and they are to be seen in little colonies of eight or ten, and are continually on the wing gyrating round and round some favorite rock. They attack everything that flies within their radius of flight. I never saw them feeding or taking any rest, except for a minute or two, when something would come along, a *Papilio* or *Colias*, when at them they would go until the larger species would be chased out of sight. After a time they would come back and resume the same circular flight, one behind the other. In order to capture any, one is obliged to stand perfectly still for five or ten minutes in the path of their flight, until they get used to your presence, and then they get nearer and nearer to your net which you must hold in position to strike as quickly as possible. It is a case of hit or miss; if the latter you will not see them again for quite awhile. I have waited for a half-hour before they would put in an appearance again at the old spot and then they took good care to keep out of range of my net. It is single brooded I believe; I have never seen or taken it after July."

REFLECTIONS ON THE REALIZATION OF ONE OF BOYHOOD'S DREAMS.

By Prof. A. J. Snyder, Belvidere, Ill.

[Not intended for those who live within the magic circles whose boundaries circumscribe the cities of Boston, Philadelphia, New York, Reading, Pittsburg, Newark, nor for the inhabitants of any other city which is the proud possessor of an Entomological Society, are these lines written; but for the poor, isolated "bugologist" who lives one thousand miles from "nowhere," who seldom meets a congenial spirit, but who is considered an irredeemable crank, even by his relatives, and who must send all his *rara aves* within the charmed circle in order that they may be properly christened; to you, fellow-creatures in lonesomeness, who frequently write me about how your n. sp. have been annexed while in pursuit of cognomens, this epistle is inscribed.]

My first thought concerning these remarks was to label them "Post Mortem Examinations," for they are based on the fact that the past summer found me in the East examining the remains, "legs, thoraxes, abdomens," etc., of all those insects which you poor collectors have been sending there for years and about which at least semi-annually a wail goes up from the editorial page of entomological journals. You remember how we are instructed to always "pin firmly, pack in one box which is enclosed in another, all around which must be several inches of springy packing material, the whole branded on each of its six faces. "Fragile! ! With Care! ! !" etc. It is useless to extenuate—you know how they ought to be packed, or at least you should know; but really, brethren, now that, like Cæsar, I may say, "*Veni, vidi,*" the greatest marvel of the age is how those Eastern collectors can so skillfully patch up specimens; for, within the magic circle, I actually saw (believe it, if you can) whole drawers full of butterflies without a single antler missing; and, name it not in Gath, but some of those butterflies met their death at our hands. I know it, for occasionally some of them still bear our labels.

Probably every boy who inclines to scientific pursuits dreams of some day visiting the Smithsonian and the National Museum; and if, as in my case, his dream is not realized until he reaches man's estate, he has by that time learned of other great collections in the East which he longs to see.

Our magazines sometimes contain articles describing visits to the great collections of insects in Europe, but I fail to remember a single description of America's collections. Only two years ago a friend, whose collection I was viewing, said: "I was down East last summer and visited all the collections;" yet, to my sorrow, that was about all that he said about them, and he, like the rest, kept to himself all that he had seen—and we must excuse him, for he is a very busy man. By the way, is it generally known that nearly all of the great collections of insects in America to-day have been made by men who were very busy—men who earned their "bread and butter" in some way not connected with entomology, or by a few fortunate mortals born with enough of this world's goods to need to give no attention to "bread and butter," but so interested in entomology that their time was devoted to it with no other remuneration than the pleasure it afforded?

These reflections are not written in the spirit of one who knows all about the great collections, but with the feeling that something has been gained which should be passed on and with a fervent wish to help the less fortunate.

Were any one to ask me to-day, "Where is the greatest collection of Lepidoptera in America?" I should be compelled to say, "I don't know." At least three times in the past have I gained access to a great collection and the owner has said, "You now stand in the presence of the greatest collection of Lepidoptera in America," or words to that effect. I have never disputed the statement, but I dare not tell where these collections are; for I have a feeling that at least half a dozen others would rise in wrath and say to those who make such claims—words unsuitable to reproduce here. You can sympathize with such pride in one's collection; for where is the cabinet, even of the tyro, that does not contain specimens which he would not exchange for gold or others?

To return to the story. Last July found me in the company of thousands of pedagogues roaming the streets of "the City of Magnificent Distances." Even as some men approach Niagara Falls, with both desire to see and reluctance to have realized, or as the moth approaches the flame in ever narrowing circles, yet irresistibly drawn to the centre, we approached the Smithsonian and the National Museum. First we visited the Capitol, called on the President of the United States, viewed the Government Buildings, the Monument, Mt. Vernon; but finally, having sent our lady friends upon an errand sure to detain them all day, and having found my congenial friend, Mr. James E. McDade, of Chicago, an early morning attack upon the United States Entomologist, Mr. L. O. Howard, was then planned, with a determined attempt to gain access to the goverment collections of insects.

Our peregrinations about the government buildings assisted us somewhat in locating the Entomologist's office. We had neglected to bring letters of introduction, so presented our cards. I enjoy finding what may be accomplished without the assistance of that too frequently used power known as a "pull." We had no excuse for an intrusion upon government officials except our interest in entomology, but found that all-sufficient, and were soon chatting pleasantly with Mr. Howard, whom we fonnd to be a genial, business-like man, with unusual ability to rattle off scientific names of insects, even if they consisted of some twenty-six or more syllables.

After some minutes of pleasant conversation on insects and men, Mr. Howard gave us a note of introduction to Mr. Ashmead, one of his assistants, whom we found by entering a dark hole in one corner of the National Museum and then ascending a winding stair.

Every possible courtesy was extended us, and soon Mr. McDade was examining the Odonata of the National Museum, while my attention was given to taking notes on the Argynnids. Before noon Mr. McDade joined me, and we then made a hasty examination of most of the American species. After thanking the authorities for their assistance we could hardly wait to get around a corner before turning to gaze at each other in amazement, for the collections in both Lepidoptera and Odonata were far below what we had anticipated. Outside the Noctuidæ and Bombycidæ, where the labors of Prof. J. B. Smith and Harrison G. Dyar are plainly evident, the National Collection falls far below many private collections I have seen in the West. Just why this should be so I am somewhat at a loss to explain, but two probable reasons suggest themselves: First, the government has not provided adequate means for building up a great collection of insects, and departmental workers have had to build up private collections in the special orders in which they work at their own expense, which the government has neglected afterward to purchase; secondly, collectors and scientists have not shown the proper spirit of generosity and donated to the National Museum duplicates of new and rare specimens which they have captured.

At reasonable cost and within a few years, by placing at the disposal of the head of each department (Lepidoptera, Odonata, Coleoptera, etc.) a reasonable financial support, and through a system of exchange and purchase, a collection could be built up which would be second to none, as a National Collection should be. Such a collection would be of inestimable value to all scientists, but especially would it be an inspiration to young scientists and give them an advantage unknown to the entomologists of to-day.

Economic entomology, which has dealt mainly with larval forms, would be immensely aided by a National Collection containing long series in both adult and larval stages, and no thinking person can doubt that such a collection would pay financially in the added ability which it would give to cope with insect pests and their depredations.

No criticism upon the present officials is intended, for they are doing all in their power, but a plea is offered for a general awakening among legislators and others to the need of increased appropriations for such work. Too many rare specimens have already crossed the ocean to swell the collections of more appreciative collectors, who are willing to pay something near the real value.

Does not America possess a millionaire who would willingly devote one of his millions to build up a great American collection of insects? If not, at least we who do not possess the millions we may contribute something from our duplicate lists for the love which our hearts bear this great nation and for the benefit of those who in future shall care for its interests.

The National Museum contains, practically, no types of Argynnids. Among the rather rare species represented there are *nokomis*, *nausicaa*, *electa*, *columbia*, *liliana*, *rupestris*, *artonis*, *eurynome* and *arge*. There are a few examples of *nevadensis* and *meadii*, but the species are not separated. Bulletin No. 44 of the National Museum, by Prof. Smith, gives the names of the *Catocalæ* in the collection, and few if any additions have been made since its publication.

Experience taught me that it was useless to try to remember or even to take notes on all that one sees in a great collection; hence throughout my trip special attention was paid to Argynnids and *Catocalæ*.

It is but a few hours' ride from Washington to Philadelphia, where I soon stood in the presence of the collection of the Philadelphia Academy of Sciences. With less than a week for the purpose it would be useless to attempt to see or speak of the collection as a whole, and besides a glance at a few of the beautiful exotics, and the method of mounting them with glass above and below, so that both surfaces may be seen without removing the specimens, the time was devoted to the two genera mentioned above. Here, as at the National Museum, I soon realized that to see what I most wished to see I must seek private collections. Of especial note were *Arg. bischoffi* (the vars. *saga* and *arctica*), *inornata*, *clio*, *astarte*, *boisduvalli* (var. *chariclea*) and *alberta*.

Admission to the Academy collection was gained through the courtesy of Dr. Henry Skinner, who then took me to view his private collection of American diurnals. Many types are in this collection, more among the Hesperidæ than elsewhere, I believe; and it is unnecessary to expand upon the beauties of a collection which is known to contain many rarities in excellent condition. So particular is the doctor that he even objects to a Western collector's raising the hair-lock of a *Pamphila;* he says he even likes to know what color the hair of a new species may be, but we who have seen them alive probably know better than the doctor how "greasy" a live *Pamphila* is and how easily its scalp is removed.

Among the excellent features of the collection is the long series which one finds of many species and the ease with which similar species may be compared. One may find proof of many of Dr. Skinner's theories by examining the collection with its owner. Good series of the types of *Arg. platina* and *snyderi* are here and co-types of others, among them *Arg. atossa*, which no one could mistake for another species.

The afternoon and evening with this collection sped all too rapidly, and the following morning our train passed through historic Valley Forge, on its way to Reading. Had Washington spent a summer in Valley Forge, and been inclined to entomology, he could have forgotten many of the nation's troubles in the pursuitof insects; for the thought comes to me, as I remember the beautiful valley, "What a delightful country for a ramble!"

To be cordially welcomed to the home of Dr. Hermann Strecker, and to spend the greater portion of a day with the doctor, examining his marvellous and beautiful collection of Lepidoptera, was a treat which I had not even dreamed of realizing. We looked at drawer after drawer of great beauties, taken from every conceivable nook of the globe. Tailed butterflies and tailless butterflies were there, great butterflies and small, handsome and dull ones, common ones and rare; in fact, I know no other collection which contains so many uniques. Here are a number of the types of both *Argynnis* and *Catocalæ*. Time, space and ability prevent my saying half that is in my mind as I think of this and the other great collections viewed during this trip. Dr. Strecker has types or co-types of *Argynnis baal*, *edwardsii*, *coronis*, *monticola*, *arge* and *kriemhild*, to say nothing of other types and oddities which one is not likely to see elsewhere.

A few evenings later a dusty, weary traveler might have been seen seeking his way in "The Smoky City," trying to find the Carnegie Museum, and its director, Dr. W. J. Holland, and gain a glimpse of the collection formerly owned by Mr. W. H. Edwards. Success crowned the seeker's efforts and the next forenoon was spent in fairly reveling over the types of North American Argynnids named by Mr. W. H. Edwards. Just take Smith's list of Lepidoptera and turn to the genus *Argynnis*, and note how many of the names are followed by the abbreviation "Edw.," and you will know just what types I examined that forenoon. One needs but to see these hundreds of Argynnids, many of them still labeled in Mr. Edwards's handwriting, as I trust they always will be, to recognize the marvellous ability of the man who has contributed so much to our knowledge of the Lepidoptera of North America. Troubles in securing proper identification of Argynnids have at times driven many of us nearly wild, but a half-day with Mr. Edwards's types convinced me that he knew just what he was doing when his collection was at hand, no one better.

There are many collections yet in the East and Northeast which it is my ambition to visit, but ênough was seen during this trip to convince that it would be wise to go home and permit what had been seen to soak in, reserving other treats for other times and to avoid the utter confusion which results from seeing too much.

In but one case was there failure to see a collection which it was planned to see, and then the owner was out of town. From him soon came a letter of regret that he was not able to show me his collection. Such unlimited hospitality and cordiality as I met from those upon whom I had no claims but the common interest in entomology speaks volumes for the people who have collections.

Even the western spirit of "help each other" was equaled; for one of the great collectors insisted upon filling a box with species new to my collection, which he compelled me, I trust nôt too unwillingly, to bring home.

RECOLLECTIONS OF OLD COLLECTING GROUNDS.

By H. F. Wickham, Iowa City, Iowa.

VIII. The Buena Vista Valley.

We left Colorado Springs on the 29th of June, and after a few hours' ride through beautiful mountain scenery arrived, late in the afternoon, at the station of Buena Vista. The railroad on which we came does not enter the valley proper until it has paralled it for some distance, and the depot lies on the mountain-side, high above the town, affording the new-comer a very comprehensive view of the surroundings. From this point of observation in the foot-hills of the Park range he sees at his feet the wide valley of the Arkansas River, extending across to the Saguache range, which here forms the Continental Divide. The town is a neat-looking one, considering its size and location. It lies near the head of the valley proper, which soon narrows to a mere gorge as the river bed is ascended towards Leadville. Looking in the other direction, however, one sees a long broad stretch of tillable land extending downward along the course of the Arkansas, and the numerous farms which dot the landscape show the neighborhood a well-settled and thriving one.

The altitude of this valley, in the vicinity of Buena Vista, is between 7,900 and 8,000 feet. The soil is sandy, often gravelly or stony, the waste places covered more or less thickly by a growth of scrubby pine, the open spots supporting a flora more characteristic of the plains than of the mountains. The creek bottom is grown up with willows and cottonwoods, and has a sufficiently deep layer of dead leaves and forest mould to harbor many species of beetles which would certainly not be met with on bare sands. Cottonwood Creek, as it is called, is a clear stream, in favorable contrast to the Arkansas, which is a muddy yellow torrent rushing along at the bottom of a rocky gorge, affording at this place none of those broad reaches of damp meadow often so prolific of insects. A number of small marshes exist in the neighborhood of town, however, and help to give variety to the collecting.

In Cicindelidæ we found but few species ; one example of *C. vulgaris* was picked up dead and proved to represent the form *obliquata* with extremely wide markings. *C. repanda* was rather common. *C. cinctipennis* was taken at one spot only, along a sandy little-frequented road in the creek-bottom, not close to the water however. By dint of hard work the three of us managed to get about seventy specimens during the course of the morning. It is less shy than many of the larger species, though not particularly easy of capture. The series shows a wonderful range of variation in elytral markings, though none approach the form *imperfecta* very closely. They are all obscure or blackish above, none showing the brilliant green tints which are to be seen on specimens from Arizona.

Some of the Carabidæ are well worthy of note. Under logs among the cottonwoods we got *Carabus oregonensis* and *C. serratus*, though but sparingly. Two species of *Elaphrus*, one of which is *clairvillei*, the other doubtfully *lecontei*, were found in marshy spots. A number of *Bembidium* were captured on muddy banks of large pools near the railroad tracks ; they were mostly *bimaculatum*, *lucidum*, *fuscicrum*, *nitidum*, *nebraskense*, *nigripes*, *præcinctum* and *dubitans*, the first three rather common, the remainder rare or less abundant. *Patrobus longicornis* was taken under stones in the same locality and with it a lot of *Platynus errans* and *cupripennis*. *Pterostichus protractus*, *P. luczotii*, and *Calathus dubius* were to be seen under logs near the creek. *Philophuga amœna* was found about the roots of yuccas. *Cymindis planipennis* and *Cratacanthus dubius* were rather plentiful beneath stones on dry sandy spots. One pair of *Chlœnius interruptus* was taken in a very grassy little marsh. They seemed to me hardly referable to that species but Dr. Horn so decided. It was previously known from the Pacific coast only, so its occurrence here is of much interest. *Harpalus ochropus*, *fallax*, *clandestinus*, *oblitus* and *amputatus* were tolerably abundant on open spots under rubbish and stones.

A number of Coccinellidæ were beaten from herbage, among which may be mentioned *Hippodamia 5-signata*, *lecontei*, *convergens*, *spuria* and *parenthesis*, *Coccinella transversoguttata* and *monticola*, and *Harmonia picta*. *Exochomus marginipennis* and variety *œthiops* occurred occasionally but not in any abundance. Of *Brachyacantha* we found a form of *ursina* closely approaching *albifrons*. *Hyperaspis 4-vittata* occurred about roots of plants. We also met with the *Hyperaspidius* mentioned in my last paper, where I unfortunately, by a slip of the pen, wrote of it as occurring with aphides on cacti. I should have written with Coccidæ.

Elmis corpulentus was seen in small numbers in Cottonwood Creek, clinging to submerged logs. *Tripopitys punctatus* was met with once, under a tie near the railroad track. Of *Corymbites planulus* a few were taken from isolated stalks of rather high grass, where they were resting in the fashion often exhibited in the East by *Limonius griseus*. *Cardiophorus edwardsii* was beaten from dwarf pines but was quite rare. It is a western beetle, previously known from Nevada and California.

A great stack of telegraph poles, some of which were quite recently cut, was piled up just on the edge of the town. On this pile, by careful search, we got quite a number of timber-beetles of different families. In the Buprestidæ we took *Buprestis subornata* and *B. consularis*, *Melanophila drummondi*, *Chrysobothris dentipes* and *Chrysobothris trinervia*. A couple of *C. ignicollis* were taken at large. *Podabrus lateralis* was beaten from herbage along the road leading to the base of Mt. Princeton. *Collops bipunctatus* was seen, not very abundantly, on low Compositæ near town. *Trichodes ornatus* was taken on flowers, particularly those growing on the higher altitudes among the foot-hills. *Clerus nigriventris*, *C. mœstus* and *Thanasimus undulatus* were all found running about the wood-pile in company with the aforementioned Buprestidæ.

Few Scarabæidæ were met with, among them *Ægialia lucustris*, *Aphodius hamatus* (this latter under dung close to the little swamp which furnished the *Chlænius*), *A. denticulatus* and *A. vittatus*. A single male of *Odontœus obesus* was secured and is of particular interest, since it is Pacific in distribution. Mr. Schwarz had, however, previously taken one at Veta Pass, altitude 9,400 feet. We took two species of *Serica*, one of them like *vespertina*, while the other approaches *trociformis* in appearance but differs in sculpture. A female *Lachnosterna rubiginosa* was found floating in an irrigating ditch.

Of Longhorns we took several. *Prionus californicus* was seen rarely, one specimen deserving note on account of reaching a length of but 25 mm., about half the usual size of the species. *Xylotrechus undulatus*, *Plagithmysus muricatulus*, *Acmæops proteus*, *Monohammus maculosus* and *M. scutellatus* were all dwellers on the wood-pile. Some Chrysomelidæ observed are as follows : *Coscinoptera dominicana* on scrub oaks, *C. vittigera* rather common on various low plants in company with *Babia 4-guttata*, *Saxinis omogera*, one specimen, *Plagiodera oviformis* and *Trirhabda convergens*. On willows we saw *Galerucella decora* with *Disonycha 5-vittata* and *Crepidodera helxines*. Tenebrionidæ were not numerous, but we took *Trimitys priunosa* under stones or about the roots of plants, in company with *Coniontis obesa*, *C. ovalis* and *Eleodes brunnipes*. Under ties along the railroad were found a few each of *Eleodes humeralis*, *E. extricata* and *E. nigrina* and a single *Asida opaca*. *Helops difficilis* was not rare under pine needles or in the rubbish about the roots of plants. It seems not worth while to enumerate the other Heteromerous beetles found, and the rather small series of Rhynchophora.

A collector going into this valley will find it interesting as an example of the encroachment on rather high altitudes of many species belonging more properly to the plains fauna. This seems to result from the very gradual slope of the Arkansas valley and the peculiar characteristics of the soil.

COLLECTING ON BISCAYNE BAY.

By Annie Trumbull Slosson.

(*Continued from page 94.*)

But there are other collecting grounds besides the deserted camp. I spend many hours along the shore of the bay. There are several accessible stretches of sandy beach where at low tide I find some interesting things. Under wet seaweed or beneath bits of coral rock or pieces of wood are many beetles, some very rare ones. But it is not easy to discover or to capture them, for there are so many other living creatures to distract the eye and mind. As one turns over a heap of seaweed, hundreds of small shrimplike crustaceans, "sand flees" as they are called—jump and wriggle about in a bewildering way. As they strike the sand there is a pattering sound as of rain drops. Then large brown shining ear wigs glide rapidly out from under the seaweed, looking much like big *Staphylinidæ*, or slender Carabs. Pinkish earthworms crawl sluggishly along, tiny ants run on the sand, and occasionally an immature cricket, soft and pallid, hops up. All this movement and life is at first distracting, but the trained eye soon learns how to distinguish readily what it seeks. *Platynus floridensis*, a graceful Carab of greenish black runs swiftly out, *Bembidium constrictum* darts from the heap of seaweed and *Ardistomis obliqua* with its two bright red oblique spots steals out more slowly. Here too I always find *Tachys capax*, a tiny beetle of shining black, with pale legs and antennæ, and *Anthicus vicinas*, more slender and graceful. I have taken here also *Loxandrus florideusis*, *L. celer*, *Oodes lecontei*, *Dyschirius hæmorrhoidalis*, *Chlænius circumcinctus*, *Ardistomis schaumii*, *Altænius cognatus*, *A. gracilis*, and several others. There are also many Staphylinids, the most common one being the little *Bledius basalis* which is always running over the white sand. *Philonthus alumnus* is also plentiful, while there are two or three species of *Stenus* and at least two of *Sunius*. When tired and stiff with sitting on the damp sand I change my position, take my net and going to the sandy stretch a little farther from the water I chase tiger-beetles, flies, and aquatic bugs. There are two or three species of *Salda* which fly over the sand, one of them very pale in color, almost white and very difficult to detect on the white sand. In diptera there are some very pretty Dolichopodidæ, most of them of whitish green, to harmonize with the tints of the shore, an occasional robber fly and *Borborus venalicus* by thousands. I find also on the damp sand a species of the little three-toed cricket, Tridactylus, looking like a miniature mole-cricket. It is very agile and hard to capture. Still farther back from the water and on higher ground grow many flowers, and there I hunt bees, wasps, butterflies and bugs till time to wend my way homeward over the glaring white, hot coral road.

Sometimes I spend a morning on the Miami River in a rowboat. We row along the shore under the mangrove and search the leaves for larvæ on coccoons. Here can be watched the whole life history of the dark blue butterfly, *Erycides batabano*, which was fully recorded a year or two ago by Dr. Dyar. It is a beautiful life in every phase, from egg to imago. It is still fascinating to me, after seeing it so many times, to peep into the carefully folded mangrove leaf fastened with finest, strongest silk, and see the lonely larva of rich purple red, the color he wears until his last moult. Then he becomes quite a different creature, of soft bluish white with head still of crimson. Then comes the graceful white chrysalis and last the butterfly of rich dark blue. On the mangrove too the little white moth, *Eupoeya slossoniæ* lives its life. The genus is no longer Eupoeya, but I have forgotten its latest name and have nothing here to tell me of it. The larvæ are lovely, soft, silvery green things, hard to distinguish when flattened and motionless on the green leaves, and the small white coccoon of parchment-like texture is a dainty cell in which to await its snow white wings. Among the mangroves fly several species of small dragon flies, easily caught from the boat with a net. And over and across the blue water are always flying scores of little gray and white Pyralid moths, a species of *Nymphaella*, I think; perhaps the same one we have by our northern waters, *N. maculalis*. They often fly within reach of our nets, sometimes even coming into the boat and resting there. Our mornings among the mangroves are pleasant ones. It is an indolent, luxurious way of collecting, not such hard work as grubbing in wet sand or hunting under dank seaweed, and I like it for a change. Sometimes we take a little naptha launch and go far up the river almost to the everglades. There, the other day, I landed and hunted about for half an hour. I took, for the first time on the east coast, *Burtia belæ*, a pretty day flying moth, with scarlet body and transparent wings. I have taken many at Punta Gorda on the west coast, but these are much larger than any I have seen there. I took also the other day, on some flowers near the river, a moth I suppose to be *Harrisina australis*, Stretch. The type came, I think, from Florida. It is greenish black, with orange collar, and about the size of *H. americana*, perhaps a trifle larger. I caught too a ragged specimen of the butterfly *Apatura flora*, the first I have taken. Butterflies and moths are not nearly so abundant as in former years. The freezing weather of February 13th and one or two later cool waves destroyed much insect life. The flowering plants, too, were killed or temporarily injured, leaving few blossoms to attract insects. Our evenings have been very cool. as a general thing, and I have had little success in collecting at light. Last week a warm, still evening, following light showers, brought hundreds of beetles to the lighted piazzas. But the number of species was small. *Ptilodactyla serricorne* came in great numbers, and there were *Ardistonis obliqua*, *Oodes lecontei* and scores of *Selenophorus palliatus.*

But one evening I found on the floor under an electric light a specimen of *Casnonia ludoviciana* the second I have ever taken. The first I found at Lake Worth in the sand near the water. I have taken also at light this season two specimens of the handsome longicorn, *Euryscelis suturalis*, Oliv. It is much like a *Neoclytus* in appearance. Another showy longhorned bettle not uncommon at light is *Lagochirus araneiformis*, *Elaphidion inerme* is abundant, two or three species of *Laptostylus* come occasionally, as does also *Hippopsis lemniscata*.

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DESCRIPTION OF HAPLOA TRIANGULARIS N. SP.

By John B. Smith, Sc. D.

Ground color white; the markings smoky brown or blackish; head rusty or orange yellow; legs of the same color, save that the anterior and middle tibiæ and tarsi are black; antennæ black; collar red or orange yellow, with two black or brown spots at the centre; thorax with a blackish band through the centre and this is continued more or less obviously over the centre of the abdomen There is a yellowish shading at the junction of the thorax and abdomen, and in the male the anal tufting is also tinged with yellow or rusty. The primaries have a black or brown costal stripe which extends nearly to the apex. A similar stripe extends along the inner margin, but does not quite reach the base. There is a narrow outer margin, which may or may not reach the apex and rarely reaches the inner angle. From the inner angle, in fully marked specimens, a stripe runs diagonally toward the costa, which it reaches about ⅓ from base. From the middle of this stripe runs another, reaching the outer margin just below the apex. This leaves a triangular white patch just within the outer margin above the inner angle, and a narrow white band from the basal third to the apex. This band in fully marked specimens is divided by two narrower smoky bands into three white spots. In this case there is a broad white stripe running approximately through the centre of the wing below the median vein, but not reaching the inner angle. A large white triangular spot just above the inner angle and three white spots below the costa, the outer covering the apex. This complete maculation is rarely present. The first break occurs in the narrow cross bands separating the three white spots, and then we have a continuous white shading extending below the costa to the apex. The next to break is the connection between the white stripe running below the median vein and the triangular white spot above the inner angle. Finally, the connection between the oblique stripe running below the apex is broken, and this leaves as the simplest marking a triangular smoky or blackish blotch, the apex resting at the middle of the median vein, the base extending from vein 1 to vein 5 or thereabouts. Every intermediate form is represented. Secondaries white, with or without a black or blackish dot on vein 2 near the outer margin. Beneath white, with a more or less marked yellowish tinge and with the markings of the upper side showing through and sometimes rather distinct.

Expands 1.25 to 1.50 inches—31 to 38 mm.

Habitat: Near Newark, N. J.

A series of eleven specimens, representing both sexes, is before me by the courtesy of Mr. J. B. Angelman, of Newark, N. J. Mr. Angelman has taken this species rather commonly; and, considering it one of the normal forms, has made no special effort to preserve it in numbers. At first sight it is easy to mistake it for *confusa* Lyman; but when the markings are carefully examined it will be seen that they are almost identical with *suffusa* Smith. This seems now to be considered a white form of *colona* Huebner; but, whether that is so or not, it is certain that the type of maculation in the new species is precisely that of the forms which I named *suffusa*. It is, however, a distinctly smaller species, more sordid in appearance, and the contrasts between the dark and white markings are much less evident. Furthermore, the tendency toward the breaking up of the markings shows itself in a different way; and in every case, in the new species, perhaps the most prominent feature is the triangular black patch toward the inner angle of the fore wing. It seems remarkable that there should be a good new species belonging to this genus in a region that has been so well collected over as has the eastern part of New Jersey, and the species indeed does not seem to be at all rare. Dr. Dyar has a specimen from Plattsburg, N. Y. It is certainly as good a one as any other in the genus; and, though I have seen hunreds of specimens, from all sources, since the time that I published on this subject in the Proceedings U. S. N. M., I have seen no reasons to change the conclusions as to the validity of the species therein recognized, unless indeed it be admitted that the white forms are simply varieties of those that are normally maculate. No one has, so far as I am aware, bred any of the species from egg to adult, and until this is done it may not be possible to decide finally on the specific values of these insects.

ADDITIONS TO THE LIST OF CRANBERRY, N. C., BUTTERFLIES.

By Lancaster Thomas, Philadelphia, Penna.

In Entomological News, 4,80,1894, Dr. Henry Skinner gave a list of the butterflies taken at Cranberry, Mitchell county, North Carolina, in the two weeks extending from July 7th to July 21st. This list contained the names of thirty-one species. Since that time I have visited Cranberry every season, and remained there from June until October, and collected nearly every favorable day. In addition to the list given by Dr. Skinner I can now add thirty-five species as follows, making a total of sixty-five species for this locality.

LIST.

Agraulis vanillæ
Melitæa phæton
Phyciodes nycteis
Thecla m-album
Thecla calanus
Thecla poeas
Feniseca tarquinius
Vanessa antiopa
Grapta interrogationis
Grapta comma
Grapta progne
Pyramies cardui
Junonia cœnia
Neonympha eurytus
Satyrus alope
Pieris protodice
Callidryas eubule
Colias cæsonia
Terias jucunda
Terias delia
Pamphila campestris
Pamphila zabulon
Pamphila phylæus
Pamphila accius
Pamphila fusca
Pamphila peckius
Pamphila verna
Pholisora catullus
Nisoniades juvenalis
Nisoniades petronius
Amblyscirtes vialis
Pyrgus tessellata
Eudamus pylades
Eudamus bathyllus
Eudamus lycidas

It will be noticed that in the above list there occurs three species that are new to the locality, one *Grapta progne*, reported by Scudder and Holland as not having been taken south of Pennsylvania, and the other two *Terias jucunda* and *delia*, reported so far from the gulf States only. *P. progne* can be taken in proper season in large numbers, and *jucunda* and *delia* were taken here last season, in all about a dozen specimens. *Argynius diana* is also found here and is sometimes plentiful, but for the summers of '97 and '98 rather scarce, but unusually large and fine.

The altitude, 3,250 feet at Cranberry, makes the fauna of the region almost Canadian in character, and therefore the more remarkable that butterflies of the north and the extreme south should be found flying together.

A NEW COSSID FROM TEXAS.

By Harrison G. Dyar.

Inguromorpha arbeloides, n. sp., with the structure of *I. basalis*, but vein 1c of fore wings absent except at its tip beyond the point at which it joins vein 1, thus approaching in structure the Indian genus *Arbela*. The species resembles *Arbela nais* Druce most nearly of the Mexican species.

Male. Light brown, mottled with darker, purplish brown. Fore wings heavily strigose-mottled in a series of spots between the veins, most heavily along the internal margin, in a broad submarginal area and at end of cell; discally the spottings are more sparsely placed and terminally they are smaller, though equally numerous. Hind wings paler, faintly mottled all over; a large, dark, discal spot; inner area towards base without spottings. Head and thorax in front dark brown; abdomen about the color of fore wings. Expanse 27 mm.

One male, Brownsville, Texas; C. H. T. Townsend, 11th June, 1895; No. 606. U. S. Nat. Museum, type No. 4249.

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A NEW TRYPETID FROM HAWAII.

By D. W. Coquillett.

Dacus cucurbitæ, n. sp. Head light yellow, the occiput, except the sides and upper margin, reddish yellow, an ocellar black dot, front marked with a brown spot in front of its center and with three pairs of orbital brown dots, a black spot on each side of the face near the middle and a brown spot on the middle of each cheek; antennæ, palpi and proboscis yellow, the latter mottled with brown. Thorax reddish yellow, the humeri, a median vitta on the posterior half of the mesonotum, another on each side above the insertion of the wings, uniting with an irregular band which extends upon the pleura to the upper part of the sternopleura, also a large spot on each side of the metanotum, encroaching upon the hypopleura, light yellow; scutellum, except its extreme base, light yellow, bearing two bristles. Abdomen light yellow on first two segments, reddish yellow on the others, the extreme base, a fascia at the bases of the second and third segments, usually a lateral spot on the fourth and fifth, also a dorsal vitta on the last three segments, blackish or brownish; first segment of the ovipositor of the female slightly longer than the fifth segment of the abdomen. Wings hyaline, the apex of the subcostal cell from a short distance in front of the apex of the auxiliary vein, the marginal and submarginal cells the median third of the first basal cell and a large spot in upper outer corner of the first posterior cell, brown; anal cell brown, this color encroaching on the third posterior cell and bordering the sixth vein almost to its apex; posterior crossvein bordered with brown, this color extending to the hind margin of the wing; upper end of the small crossvein also bordered with brown. Halteres light yellow, Legs light yellow, the broad apices of the femora and the last four joints of the tarsi reddish yellow, hind tibiæ reddish yellow or dark brown. Length 6 to 8 mm.

Honolulu, Hawaii. Two males and two females bred by Mr. George Compere from larvæ living in green cucumbers. Type No. 4207, U. S. Nat. Museum.

NOTES ON ALASKAN ARCTIIDAE.

By Harrison G. Dyar.

Phragmatobia fuliginosa, Linn.

This possibly occurs in Alaska. The National Museum has a specimen collected by Dr. Stejneger on Bering Island, off Kamchatka.

Arctinia rubra, Neum.

Nusagak, Alaska, May 13, 1882. (McKay.)

Hyphoraia yarrowi, Stretch.

St. Michael's, Alaska (Turner); Bethel, Kusokquim River.

In the color of the wings the specimens resemble var. *remissa* Hy. Edw., but the markings of the hind wings are as in *yarrowi*. The fore wings are chestnut brown, the spotting sorbid white, not yellow; hind wings ocherous, the markings gray black. Below both wings are more or less strongly suffused with crimson outwardly and along costa. All the specimens are males, expanse 35 to 38 mm.

I suspect that this is really the *hyperborea* of Curtis, the expanse of which is given as 1 inch 11 lines, whereas *parthenos* Harr is much larger and probably distinct from *hyperborea*. The larval skin and chrysalis accompany one specimen. The larval hairs are dense, spinulose, uniform and rather short, whitish, mixed with black. The slender pupa is black with strong cremaster, the segmental incisures polished. The cocoon is weak and largely of silk.

Hyphoraia subnebulosa, n. sp.

♂ Fore wings reddish chestnut brown, marks pale yellow; a basal streak along vein 1 to middle of wing; another shorter streak on base of median vein, joined to costa by a short bar, at the end an oblique bar joins the center of the streak on vein 1; an oblique angular spot in center of cell and a second at the end of the cell; a transverse posterior band from costa, dentate inwardly in the interspace between veins 5-6 and again very strongly in the submedian interspace; a submarginal band, bent in dentately to touch the t. p. band in the interspace 6-7, again at 3-4 and again in the submedian interspace, but here not so as to touch the t. p. line. This outer line may be broken. Hind wings translucent, diffusely clouded, the disk yellowish, the marginal and inner areas and discal spot darker gray, relieved by a small light spot in the submedian interspace at the margin. Below shaded with crimson on the margins. Head, thorax and legs reddish, collar yellow; abdomen ochreous at sides and tip. Expanse 32 mm.

♀ Wings partly aborted and apparently not functional for flight. Coloration as in the male but the markings broader and heavier and the ground color of a more crimson shade Expanse 27 mm. Outer edge of patagia and stripes on thorax yellow; abdomen dull crimson, a few ochreous hairs along the sides and tip; legs all red.

Nushagak, Alaska (McKay), Point Barrow (Murdock) and Bethel, Kuskoquim River (through Dr. Skinner). 3♂, 1♀. United States National Museum, type No. 4,250.

Arctia caja, Linn.

The Alaskan specimens are smaller than usual, but have the bright red hind wings of the *caja* form. The white markings of the fore wings are very extensive, more so than in var. *utahensis*, but not so much as in the type of *opulenta*. They seem to be the normal arctic form of which *opulenta* is probably an aberration.

Parasemia petrosa, Walk.

This species may reach Alaska. We have the true *modesta* form from Kluchavski, Kamchatka (Dr. Stejneger), indistinguishable from Coloradan examples, and I think that our species is the same as the European *plantaginis*. At any rate, the break, if there is one, is not coincident with the dividing line between North America and Asia.

A HYBRID BETWEEN LIMENTIS URSULA AND L. ARCHIPPUS.

By L. I. Holdredge.

This specimen was captured at Oneonta, New York, June 11th, 1895. The upperside is the color of *Danais berencie* and the fore wings are marked as in *L. archippus;* the hind wings are also like this species except that the space beyond the black line crossing the limbal area is entirely black with a band of large brick-red spots parallel to the black line; on either side of these is a row of small blue crescents. The underside is nearest *ursula* as it has the brick red spots of that species; it differs from *ursula* in having interior to the row of red spots on the inferiors, a line of white spots extending from the costa to the interior margin. The specimen is a male and is about the size of the male of *L. archippus*. It is quite a handsome butterfly and should probably be called ***Limenitis ursula archippus***, hybrid. Fanciful names for hybrids are objectionable. It is best to indicate by the name what they really are.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfullyreceive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer for each number three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., MAY, 1899.

NATURAL HISTORY SPECIMENS IN THE FOREIGN MAILS AGAIN.

The Washington Congress of the Universal Postal Union, held in May, 1897, adopted a convention, one paragraph of which admits articles of natural history to the mails of the Union at the rate for, and under the conditions applicable to, samples of merchandise. The Congress fixed January 1, 1899, as the date when this convention should go into effect.

Since the beginning of the present year the editors of the NEWS have received several letters, from persons in various parts of the United States, to the effect that postmasters have refused to accept specimens of natural history intended for foreign countries at the rates permitted by the Washington Convention. At the wish of certain correspondents, we have investigated the possible reasons for such refusals. The following letter from Mr. N. M. Brooks, Superintendent of Foreign Mails of the United States Post Office, will therefore prove of interest.

WASHINGTON, March 24, 1899.

Mr. Philip P. Calvert, Philadelphia.

SIR.—I have to acknowledge the receipt of your letter of the 21st inst. calling attention to the circumstance that, since the 1st of January last, postmasters at certain United States Post Offices have refused to receive packages containing "Specimens of Natural History" which were presented for mailing to foreign countries as "samples."

In reply I have to inform you that such refusals must be attributed to ignorance on the part of the postmasters in question—due to their failure to observe the instructions published in the *Postal*

Guide issued by this department in the months of September (page 10) and January last (page 1086) as follows, viz.:

"Specimens of natural history, such as dried or preserved animals or plants, geological specimens, etc., which are not sent for commercial purposes, are admitted at the postage rate and under the conditions of weight and size prescribed for samples."

The same information in given in Section 10 on page 19 of the *Postal Guide* for the current month (March).

I am, very respectfully, your obedient servant,

[Signed] N. M. Brooks, Superintendent of Foreign Mails.

In this connection we reprint, for the benefit of correspondents, the following extracts from the Washington Convention, given in the News for February, 1898, page 46.

The conditions which must be observed for the transmission of samples of merchandise are—the packages to admit of easy inspection, not to "bear any manuscript other than the name or the social position of the sender, the address of the addressee, a manufacturer's or a trade-mark, numbers of order, prices and indications relating to weight and size, as well as to the quantity to be disposed of, or those which are necessary to precisely indicate the origin and nature of the merchandise." while articles of glass, liquids, oils, fatty substances and dry powders must be packed to prevent their damaging, or escaping into, the other contents of mails (chap. iii, art. xvii).

"Packets of samples of merchandise may not contain any article having a salable value; they must not exceed 350 grams [12.35 Avoirdupois ounces] in weight, or measure more than 30 centimetres [11.8 inches] in length, 20 centimetres [7.87 inches] in breadth, and 10 centimetres [3.93 inches] in depth, or, if they are in the form of a roll, 30 centimetres [11.8 inches] in length and 15 centimetres [5.9 inches] in diameter" (chap. 1, art. 5, sect. 5).

"It is forbidden: First, to send by mail: (*a*) samples and other articles which, from their nature, may prove dangerous to the postal employees, soil or injure the correspondence; (*b*) explosive, inflammable or dangerous substances, animals and insects, living or dead, excepting the cases provided for in the Regulations of detail" (chap. 1. art. 16, sect. 3).

The "Regulations of detail and order for the Execution of the Convention" form chapter iii, in which the following occurs as paragraph 5 of article xvii. "There are likewise admitted at the rate applicable to samples, articles of natural history, dried or preserved animals and plants, geological specimens, etc., which are not transmitted for a commercial purpose, and which are wrapped in conformity with the general stipulations concerning samples of merchandise."

Finally, the rate of postage for samples is fixed at 5 centimes for every fifty grams, that is one cent for every two ounces.

DEPARTMENT OF ECONOMIC ENTOMOLOGY

Edited by Prof. JOHN B. SMITH, Sc. D., New Brunswick, N. J.

Papers for this department are solicited. They should be sent to the editor, Prof. John B. Smith, Sc. D., New Brunswick, N. J.

A CONTRIBUTION TO A KNOWLEDGE OF THE FAUNISTIC ENTOMOLOGY OF OHIO.*

By F. M. Webster.

During the last seven years I have been able to study the insect fauna of Ohio with more or less care, and have been much impressed by the rapidity and trend of diffusion in several species of insects, some of which have appeared within the boundaries of this State since a comparatively recent date. Insects make their way into Ohio from other States, coming from almost all points of the compass, except the North, which is protected, to a large extent at least, by Lake Erie. As my duties have obliged me to pay particular attention to such species of insects as possess habits of economic interest, I have studied these with greater care, and, in fact, others may have made their way into the State without my having observed them. However, injurious insects have some characteristics which tend to give them a value in faunistic studies, for, though they must become quite destructive before they are likely to attract the attention of the husbandman, yet often the time and place where their depredations are first observed offers no mean basis for working out the problems of introduction and diffusion. In a majority of cases, perhaps, an insect will have made its appearance a number of years before it will be discovered by entomological collectors, and then it may be several years before it has increased in sufficient numbers to become destructive. But, other things being equal, it is likely to become a pest first somewhere near the point where it first gained a foothold. The data here given, while not as full in all cases as could be wished, yet it is not only the best that can be secured at present, but it is practically all that we have on which to base future investigations of this character. This information has been secured by personal observation and by correspondence, the latter being used after rigid inspection and sufficient evidence of its accuracy obtained.

The direction taken by a species on first entering the State is often influenced by rivers. Perhaps this element has had a greater influence than any other in shaping, directly or indirectly, the course of diffusion in a majority of the species included in this paper. Railways come in for a share of the credit for diffusing some species, while commerce also may be credited with shaping the course of other species. Of course the most potent factor in both shaping and defining the insect fauna of any section is the nature of the flora, both natural and cultivated, as, without food plants, it will be impossible for a herbivagous insect to exist at all.

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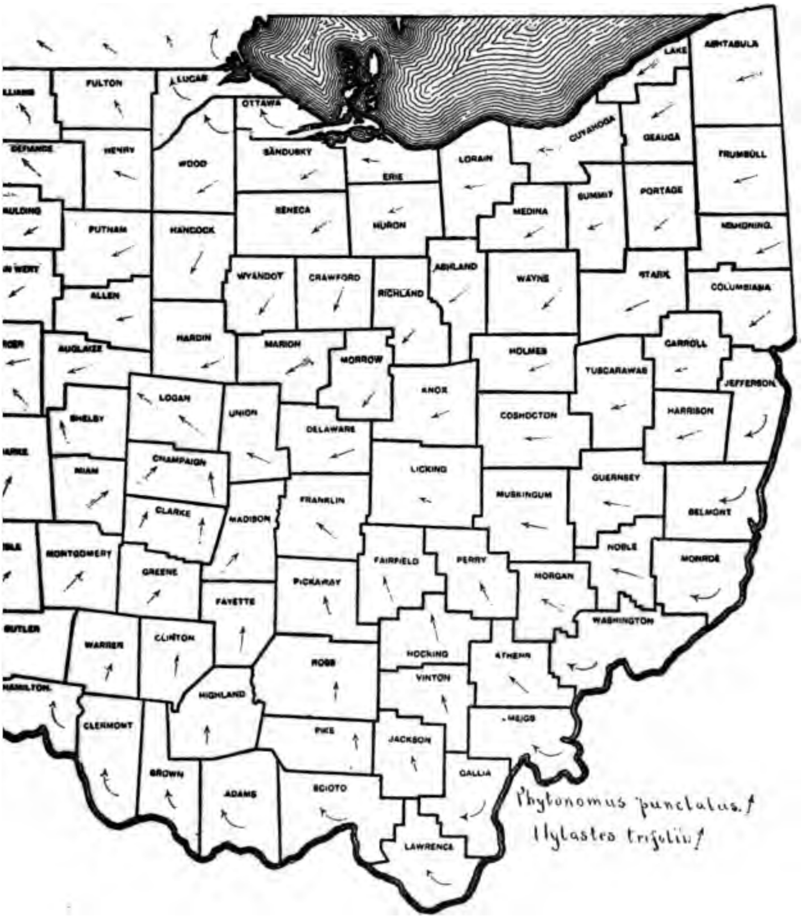
* Read before the Ohio State Academy of Science, December 29, 1898.

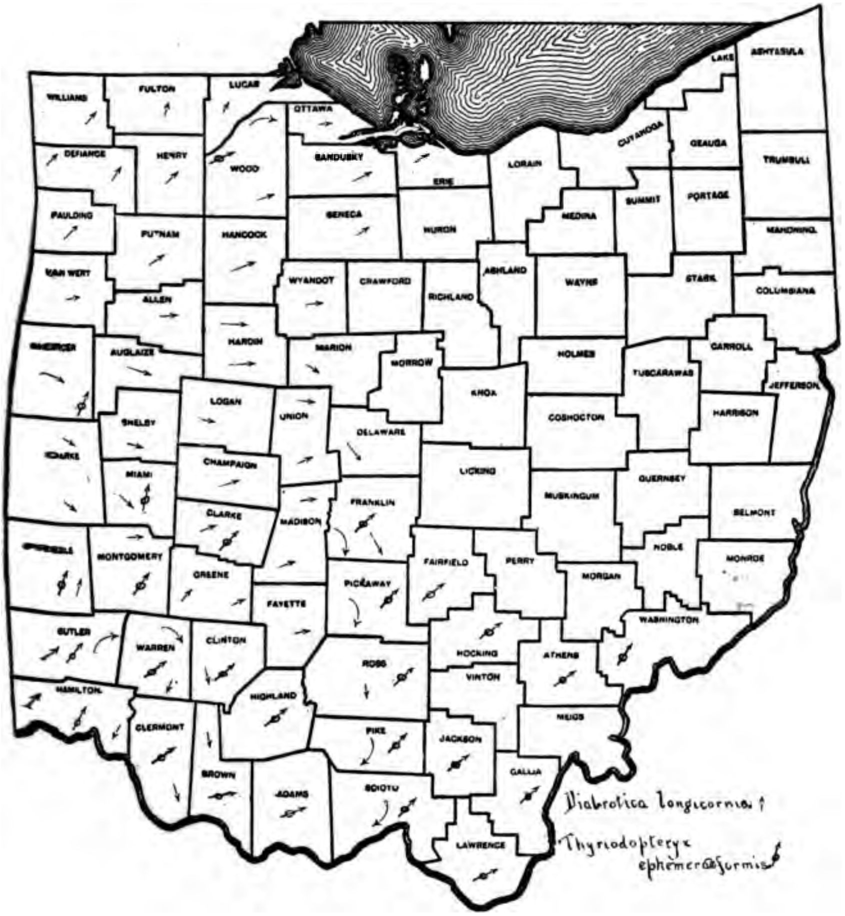
The two beetles, *Phytonomus punctatus* (the Clover Leaf weevil) and *Hylastes trifolii* (Clover Root-borer), both came to Ohio via Western New York, spreading out over Western Pennsylvania into Eastern Ohio. (See Map 1.) I saw the former quite abundant at Chautauqua Lake in the most western county in New York, in the autumn of 1888, while the late Dr. John Hamilton, of Allegheny, Pennsylvania, records it as occurring in Westmoreland county and also in Allegheny county, also in 1888, but stated that up to December, 1891, it had not become abundant enough to attract attention.



MAP NO. 1.

In 1892 it was reported to me as abundant, in the larval stage, at Perry, Lake county, northeastern Ohio, and during the same year Mr. Charles Dury collected the beetles near Cincinnati, nearly in the extreme southwestern part of the State. The stomach of a crow shot in Michigan, also in 1892, contained an adult of this species, but it was known to have been first introduced into this latter State by a lady, who unknowingly and unintentionally brought it in her trunk from some of the more eastern States, where she had been spending the summer. Mr. Hine found it the following year in the northwestern part of Ohio, but it must have spread less rapidly to the south, as it was not until 1893 that it made its first appearance at Wooster, about fifty miles from localities where it had occurred in great abundance two years earlier. Specimens now began to be received from localities along the Ohio river throughout its entire length in this State, some of these localities being situated at a considerable distance away from the river, especially in the southwestern part of the State, and it was plainly to be seen that the *Phytonomus* was spreading toward the centre from all points of the compass except the west. The late Dr. Kellicott reported its first discovery at Columbus in 1895, and there was yet a limited section to the west of this that was not known to be infested, In view of all the data at hand it seems clear that *Phytonomus punctatus* spread westward from New York, through western Pennsylvania and northeastern Ohio, and was here washed into some or all of the tributaries of the Ohio river in this region during high waters, and carried down stream, probably clinging to drift wood and other *débris.* This drift was often carried by back waters far back into the country, and with the receding of the waters left not only high and dry, but often in the midst of clover fields. As I have found the sexes pairing in autumn, it is not unlikely that more or less females are thus fertilized in the fall, and if carried down stream, however isolated they might ultimately find themselves, they would be able to start a colony in the adjacent clover fields, and their progeny would spread still farther inland. At the time I observed the species at Chautauqua Lake, New York, the adults were floating about in the waters of the lake, seemingly little, if at all, affected by their bath.

Hylastes trifolii doubtless spread from nearly the same locality in New York, and so far as my information extends followed almost precisely the same course, though its diffusion, except so far as this was due to being carried down the Ohio river, was slightly less rapid. It was first observed in northeastern Ohio, though it probably preceded *Phytonomus* by several years, and spread westward, and seemingly less rapidly to the southward. While its progress across the northern part of the State, where it also attacked peas as well as clover, was being noted, my source of information being largely reports, accompanied by specimens from farmers, one of these reports was unexpectedly received from southeastern Indiana, a direction almost directly opposite to where it already occurred in Ohio, and in the county adjacent to the one in Ohio, where Mr. Dury had first discovered the *Phytonomus*. From material received from correspondents and from personal observations, I am led to believe that, as with the *Phytonomus*, it was washed into the upper



MAP NO. 2.

tributaries of the Ohio river and left along its course by the falling stream, thus becoming established over the same territory, the outbreak in Dearborn county, Indiana, originating from adults carried into the lowlands about the mouth of the Big Miami river and below. From this point it made its way north and eastward into Ohio, meeting the south-bound tide of diffusion probably in or near

Mercer county, but leaving a central area to be occupied later by the slow but steady advance of the species now from all directions.

The species had been reported from extreme southeastern Michigan as early as 1889, the introduction being attributed to specimens having probably been brought across Lake Erie by the winds from some eastern locality. A year later a few specimens were found at Lansing, but it was not until 1892 that it began to make its presence felt, and then only over a strip of country extending from Monroe to Grand Rapids. As the insect was abundant enough in Paulding county, Ohio, to work serious injury to the clover crop in 1893, I am disposed to doubt the above mentioned theory of first introduction into southeastern Michigan by way of Lake Erie and to ascribe it to a continuation of the Ohio invasion. This seems all the more probable, as it would be only after the insect had become seriously injurious that information would be likely to reach me through farmers, and the pioneers might be and probably were several years in advance of this. A year later, in 1894, came the reports from Mercer county, Ohio, which might have been due to the southern diffusion of the northern Ohio and southern Michigan invasion, but the outbreak in Dearborn county, Indiana, could not be accounted for in the same way, and this must, therefore, be attributed to a separate introduction, for which there appears to be no other explanation than that the species, like *Phytonomus*, was carried down this river and left stranded in the lowlands in that section.

Besides this, both correspondence and personal observation shows that the species became noticeably numerous in eastern Ohio before it did in the central portion of the State. It was not until 1896 that it was observed on the Experiment Station grounds at Wooster, which is slightly over 75 miles in a direct line from Columbus, and slightly less 50 miles, also in a direct line, from Cleveland.

The influence of rivers on the diffusion of *Diabrotica longicornis* is probably indirect, but, nevertheless, clearly defined. (See Map 2.) In a previous paper presented before this body* I called attention to the peculiar adaptation of this species in the cornfields of the middle West, and there called attention also to the fact that it had probably long ago made its way over the country, but was able to retain its hold only in small and widely separated localities, until the second tide of diffusion with the more highly developed food habits of the larvæ rendered its establishment in Ohio in its present abundance possible.

The trend of diffusion is now certainly parallel with the course taken by rivers, though not necessarily in the same direction as the water flows. This insect cannot breed in great numbers in fields that are subjected to a rotation of crops. The same ground must be devoted to maize for a series of years in order to enable the insect to become even numerous, and it is the bottom lands that border the streams which are more frequently than any other devoted to corn year after year, simply because the soil will stand this sort of management, and, indeed, in some localities, like the lower Scioto valley, it is impossible to raise any other crop there. Next to this rich level lands are kept more continuously in corn, and thus the low rich lands, generally speaking, form the highways along which this species makes its way in its eastward spread. This information was gained on my part from years of study and observation in Illinois, supplemented by eight years of equally careful study and observation in Indiana, before coming to Ohio, all of which prepared me for further investigations in the latter State. While in Indiana I had been able to trace the species throughout the entire length of the valley of the Wabash river, whose upper tributaries intermingle with those of the Maumee and the Big Miami in northeastern Indiana. Knowing the habits of this insect, it will require but a study of the topography and soil of northwestern Ohio to fully understand the ease with which it would make its way from the country about Fort Wayne, Indiana, to the vicinity of Toledo and Sandusky, in Ohio. I have not as yet found it to the eastward of Sandusky and Seneca counties, except across Sandusky bay in Ottawa county, and farther southward it holds to about this distance east, even to the vicinity of Columbus, where it is now known to occur, though none were to be found there or in that vicinity in 1892.

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* Fifth Report Ohio Academy of Science, p. 41.

But, precisely as in case of *Hylastes*, we had a separate outbreak in the vicinity of the mouth of the Big Miami river, this time, however, in Hamilton county, Ohio, and it was here that serious injury was first observed, though it is probable that it was also destructive at this time in the region of the upper Maumee river. away to the north. It is very significant that while so abundant in western Hamilton county so good a collector as Mr. Dury should not have been able to find it in the vicinity of Cincinnati, in the eastern portion of the same county, the reason probably being that it did not then occur there.

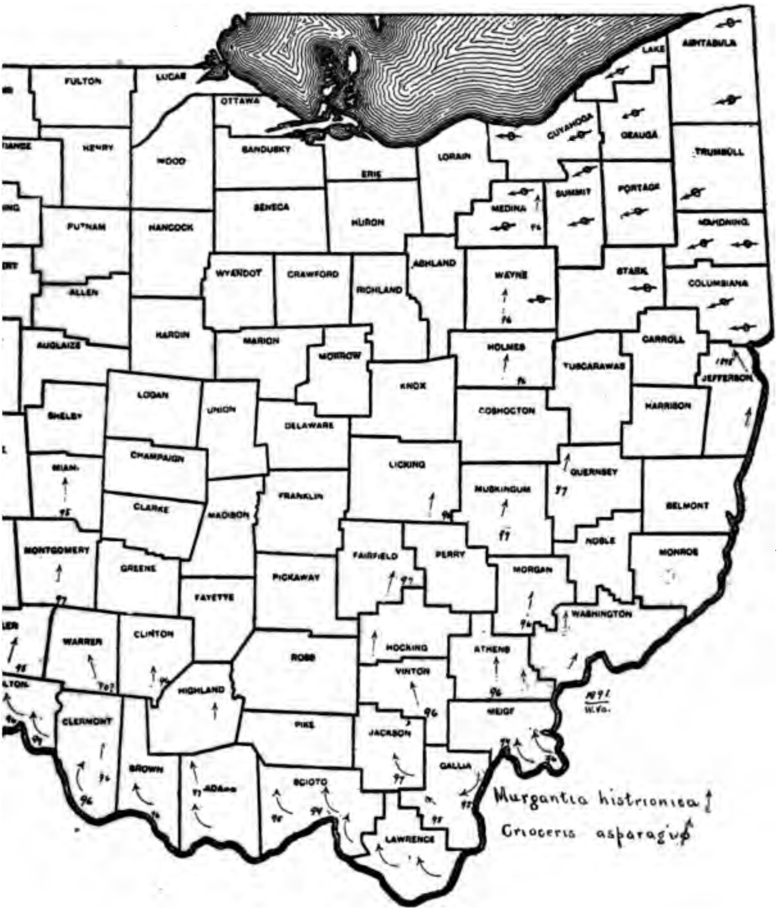
There seems every probability that it had found its way to the bottom lands about the mouth of the Big Miami river, and owing to the fact that in that vicinity there is a large permanent area of corn, developed there in great abundance, spreading northeastward up the Big Miami valley until the corn fields enabled it to span the region intervening between this and the valley of the Little Miami down which it made its way, and when it reached the vicinity of Cincinnati a couple of years later Mr. Dury was able to collect it in abundance. The species also probably continued on its northeastern course until it mingled with the diffusion from northern Indiana, and then the trend of diffusion was southward down the valley of the Scioto river to the Ohio, as I found it in limited numbers in the bottoms of the former stream a couple of years ago. It may be stated again that the bottom lands of the lower Scioto have in some places been devoted to corn continuously for over a century, but this insect known to be so destructive to this crop is just finding its way to that locality. The species may be expected to spread eastward in the centre of the State until it reaches the Muskingum river, when it will likely spread throughout the valley of this stream, where corn is the principal crop and is grown continuously on the same land for a series of years. With any amount of searching we have never yet found a single specimen of *Diabrotica longicornis* about Wooster, though the future will doubtless see it abundant in the bottoms of the Killbuck, a small stream with wide bottom lands on either side.

In *Murgantia histrionica* we have a different problem of diffusion to solve, and whatever influence rivers have had in shaping the trend of such diffusion, this has been by such as are located in adjoining States, except possibly in a single instance, where the Ohio river may have had something to do with its course of migration for a comparatively short distance. See Map 3.

As is well known, this species is a native to Central America, the West Indies and probably Mexico. Our first record of its appearance in the United States gives its area of distribution as "Louisiana and Texas," and extends back to 1864. Since that time it has spread to Long Island, New York, on the Atlantic coast, and inland it is now found in Colorado, Missouri, southern Illinois, extending northward in Indiana to Indianapolis and in Ohio to within twenty miles of Lake Erie.

It has never been a seriously destructive insect in Illinois, and in Indiana only so along the Ohio river below Louisville, Kentucky, where it first began to attract attention in 1890. When I came from Indiana to Ohio in 1891 there was in the insect collection of the Experiment Station a single specimen, said to have been collected in Warren county a year or so before. Prof. A. D. Hopkins has since informed me that he took a specimen in Wood county, West Virginia, in 1891. Being already interested in the distribution and diffusion of this species I was on the watch for its appearance in greater numbers and in other localities, but was not able to substantiate its occurrence in Warren county, or, indeed, find it at all, either in the vicinity of Cincinnati or elsewhere to the westward to the Indiana line, the direction from which I naturally expected it to enter the State.

In 1895 I was surprised to receive it from a locality nearly 120 miles in a direct line east of Cincinnati and up the Ohio river. Within a week after this first report came a second from a point about eighty miles southeast of Cincinnati and also on the Ohio river. In both instances it was stated that the pest had worked serious ravages the year before, 1894. Still the species could not be found anywhere about Cincinnati, although the large acreage of cabbage, its principal food plant in that vicinity, would imply its appearance there as soon as elsewhere, especially as its appearance east of Missouri, where it appeared about the year 1870, had been uniformly more and more recent until the present, in Ohio. It was not until 1896 that it was observed about Cincinnati, from whence it has gradually but steadily moved northward for a distance of about sixty miles. From the locality where the species was first reported it has made its way northward fully 140 miles, and through a section where the cabbage is less cultivated than in the Cincinnati region, and other food plants like mustard, etc., not more abundant.



MAP NO. 3.

The first of the two earliest reports received came from a point about fifteen miles from where the Big Kenawha river empties into the Ohio, while the second came from a point about thirty-five miles below the mouth of the Big Sandy river and at the mouth of the

Scioto river, the latter flowing down from the north, while the two former flow upward from the south, the Kenawha, in fact, rising in western North Carolina, and its upper tributaries being interspersed with those of the Yadkin and the James, which flow into the Atlantic ocean, and also the Tennessee river, which, after a winding course, empties into the Ohio river, not very far above its junction with the Mississippi.

These two occurrences, the first observed in Ohio, have puzzled me greatly, and I have been wholly at a loss to account for them. Even now I do not feel altogether sure of my ground, and state what I do at present with the hope that some one else will study the problem, and, it is to be hoped, throw more light upon it The upper Kenawha almost pierces the Allegheny Mountains, and it is a question if it does not open a gateway whereby *Murgantia* may have made its way from North Carolina or Virginia, through the mountain region, and followed down its valley to the Ohio river, this junction being, as I have stated, only about fifteen miles from where the insect was first reported as destructively abundant. If future studies show that this species thus made its way over the mountains by way of the valley of the Big Kenawha, from the Atlantic coast, where it has been known to occur for nearly twenty years, it will solve my problem, for, once thickly scattered along the Ohio river in this section, the insect might easily be carried down stream and left along the river below, and especially might this occur at the mouth of the Scioto.

The chinch bug, *Blissus leucopterus*, has in all probability entered the State from three directions. As I have recently writen on this species, it will be only necessary to explain that, like *Murgantia*, it is of southern origin, and hundreds of years ago, perhaps, spread from Central America over the eastern and central portions of the United States, as well as along the Pacific coast. Along both seacoasts we have what seems to be an environmentally specialized form, composed largely of individuals, whose wings are so aborted as to render them valueless as applied to locomotion. On the other hand, except as farther stated, over the western and central portion of the country, by which I mean the country laying between lon. 105° and the Allegheny Mountains, we have a form, all individuals of which have fully developed wings.

The Atlantic coast form is found in northeastern Ohio, to which locality it has evidently made its way, as in case of other species mentioned, by way of western New York and Pennsylvania, being at present confined here, so far as known to the extreme northeastern counties of the State, though there appears to have been a farther spread westward, through Canada, along to the north of Lake Erie, crossing into Michigan and pushing its way southward into northern Indiana and northwestern Ohio, where it evidently mingles with the western macropterous form. As intimated, the Atlantic coast form is made up of this brachypterous form largely, but, except along the Florida coast, there are among these many individuals possessing fully developed wings, which, so far as we know, interbreed with the short winged form. In Ohio both forms are found pairing together, but whether the western macropterous form will interbreed with the eastern brachypterous form has not yet been determined. There is a bare possibility that what we have been considering a single species may in reality prove to be composed of two, but I hardly think this the case, and am more inclined to consider the brachpyterous form in an evolutionary period, not far enough advanced as yet to be considered a distinct species If Columbus had appeared several hundred years later, and the country along the Atlantic coast remained longer in a condition uninfluenced by the white man, we might then found two distinct species of *Blissus* in the country now included within the United States of America. or that portion of it laying between the Mississippi River and the Atlantic Ocean.

The Asparagus Beetle, *Crioceris asparagi*, is also an imported species, having been introduced into the eastern part of the country many years ago. See map 3. It has made its way westward through New York to northeastern Ohio, probably over about the same ground as that passed over by *Hylastes* and *Phytonomus*. At present it occurs in Cuyahoga, Medina, Wayne, Stark and Columbiana counties, these marking the extreme front of its advance in the State It seems to be progressing slowly westward, and even less rapidly south and southwestward.*

Judging from its relative abundance, and also from its recent appearance in several localities, it would seem that *Thyriodopteryx ephemeræformis* spread northward into Ohio long ago, first establishing itself in the southwestern part of the State See map 2. It has been known about Cincinnati for many years and is now more abundant there than elsewhere in Ohio; in fact it has only been found about Columbus within the last five or six years, and the same is true of Springfield and other points in that vicinity. At present Washington county appears to be about its eastern limit of diffusion in this State, the border line probably trending northwestward to Franklin county, thence, rarely, to Mercer county, with a single appearance of the species at Grand Rapids, Wood county, in nearly the extreme northwestern part of the State, and within 25 miles of Lake Erie.

In the foregoing I have given as correct an idea of the trend of diffusion in several of our species of insects as the data at hand will permit. It is not expected that this is absolutely correct in all of the details, though in the main I believe that it will be found accurate, and my hope is that it will serve as a nucleus to which others with more light and further studies will be able to build, and if the future structures are better than mine, so much the better. F. M. W.

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*NOTE.--The outbreak of this species in southwestern Michigan can not be considered as belonging to the westward bound Ohio invasion, as the most persistent searching over much of that portion of the latter State west of Cleveland has utterly failed to reveal a single individual. I am inclined to believe that the Michigan outbreak is either the result of what Dr. Howard would term a "commercial leap," or else to the north of Lake Erie, through Ontario, there has been an independent tide of migration, though, if the latter were the case, it should have been observed and reported in that section of Canada, before this late day.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

ALLORHINA NITIDA L., again.—As Prof. Gillette's note on the above insect has called forth remarks from Mr. Cockerell and Prof. L. O. Howard, I feel that I will be in good company when I call attention to the fact, that in the second annual report of the South Carolina Experiment Station for 1889, as Entomologist to the Station, I gave a short notice on page 105, of the damage done the Fig crop in the South, by *Allorhina nitida* or the "Fig-eater" of the Children's vocabulary, (pronounced "Fig-gater.")

ELLISON A. SMYTH, JR.

THE Ohio State University has purchased from Mrs Kellicott the extensive collection of Odonata, which had been brought together by the late Prof. D. S. Kellicott. Aside from the complete series of Ohio species forming the basis of Prof. Kellicott's published papers on the group there is a representative series of North American species and a number of exotics, making altogether a most excellent study collection. It is fortunate that the collection is assured permanent preservation and the University is very fortunate in the acquisition Prof. Kellicott had nearly finished the manuscript of a descriptive catalogue of the Ohio Odonata based on this collection, written especially for the use of students. The species not treated in the original manuscript have been covered by Mr. J. S. Hine, and the work is being printed by the Ohio Academy of Sciences.

HERBERT OSBORN.

BULLETIN 15, Div. of Entomology, U. S. Dept. Ag., by Prof. F. M Webster, devoted to the Chinch-bug, is a valuable contribution to the literature on this widespread pest. Could its teachings be thoroughly distributed and heeded by the class of farmers who suffer most from the ravages of the pest it would accomplish great things. Unfortunately the farmers most needing it are likely to give it the least attention.

As a study in geographical distribution it is a valuable contribution to science as it contains a very complete presentation of Prof. Webster's view as to the original habitat and lines of dispersal of the insect, a view to which he certainly brings a strong array of evidence His statements concerning the probable conditions producing dimorphism are perhaps less fully supported, but there is here the possibility of so many factors having been operative that it is not safe to be too dogmatic. It would seem most probable that the winged forms are the more primitive, and the brachypterous forms the derivatives, and while it is possible that prairie fires may have had something to do in preventing the development of brachypterous races in the west, I can hardly see how they could be a primary factor since it appears to me more a matter of adaptation to constant or inconstant food supply.

His discussion of the experiments with fungous diseases of the chinch-bug and their utility is very candid, and on the whole appears judicious. He might have cited numerous other experiments indicating the effect of their use, none however, having the certainty of an experiment under absolute control, as such experiments are practically out of the question in a case of this kind. With his presentation and conclusions the practical farmer ought not to be too strongly encouraged to expect immediate and complete relief by this method nor will he feel that the method is entirely worthless. HERBERT OSBORN.

GERMAN physiology is attacking the intelligence of the ant. Professor Bethe, of Strasburg, thinks he has found a purely material reason for their recognizing each other. He cleansed the ants taken from one hill in a solution of alcohol, dipped them in a decoction made of ants from another hill, and placed them in the strange hill. They were not attacked as strangers, even when of different color and conformation. On the other hand, ants treated in this manner when put back in their own hills were not recognized by their tribe, but at once attacked and killed. Professor Bethe infers from this that ants must give out some liquid whose odor guides them and that each colony must have its own peculiar smell.—*San Francisco Examiner.*

I NOTE (to my horror) that in the article on Calliphorinæ in March NEWS, page 63, I omitted one of the most important characters that defines the group.

Lateral post humeral bristle situated laterad the presutural

GARRY DE N. HOUGH.

A TRAP FOR COLEOPTERA.—As some requests have been made for hints on collecting, I send the following note, not remembering to have seen it in print, and it may be new to some.

Many beetles of the family Staphylinidæ seem to be very fond of the sap of the birch, and may be taken in numbers by smearing leaves thickly with it, placing them in a sheltered place, preferably beside the birch stump, from which the sap exudes and covering with chips to keep out the rain.

Look sharp when you uncover the heap for Trichopterygidæ of which there will undoubtedly be some specimens, or better still throw the mass on a sieve over white paper. Go over the whole mass carefully and you will have your reward.

After preparing the trap, let it stand three or four days or longer if the weather is bad, and the result will be better than to uncover too soon.

D. B. YOUNG.

FITCH'S COTTON SCALE INSECT.—In his 3d report (Nov. 16, 1856), Dr. Asa Fitch described as *Aspidiotus gossypii* n. sp., a scale insect occurring on a leaf of a cotton plant, *Gossipium religiosum*, sent to him from Ningpo, China, by the Rev. M. S. Culbertson of the Presbyterian Board of Missions. Dr. Fitch described this insect in a general way, comparing it to the apple bark louse. Signoret (Essai, etc., Ann. Ent. Soc., France, 1870, p. 109), quotes Fitch's remarks entire, but refers the insect to the genus *Diaspis*.

In 1895 Mr. Wm. H. Ashmead, in an article entitled ' Notes on cotton insects found in Mississippi" (Insect Life, vol. vii), refers (p. 323) a species of *Aleurodes* discovered by him on cotton to the insect named by Dr. Fitch, and suggests that Dr. Fitch had mistaken a dried pupa of an *Aleurodes* for a coccid belonging to the genus *Aspidiotus*.

In ENTOMOLOGICAL NEWS for 1895, p. 157, Mr. T. D. A. Cockerell protests against this reference of Mr. Ashmead of the insect to *Aleurodes*, and prefers to consider Fitch's species as belonging to the genius *Chionaspis*, or perhaps *Diaspis*, as suggested by Signoret.

Fortunately it is now possible to remove the obscurity and uncertainty hitherto attaching to Fitch's insect. Fitch's original type specimen, labelled in his own handwriting as "*Aspidiotus gossypii*," and answering to his discription, was found in the old Fitch collection in Philadelphia by Mr. Theo. Pergande, and proves to be a single example of the larval stage of an Aleurodes. The specimen is now in the collection of the Department of Agriculture. It is interesting to discover that Mr. Ashmead's inference as to the relationship of the insect is correct, although it is very improbable that the *Aleurodes* found in Mississippi is identical with the species occurring on cotton in China. As China becomes more accessible to exploration it may be expected that an *Aleurodes* will be found to infest cotton in the province of Ningpo and probably elsewhere to which Fitch's name will apply.

C. L. MARLATT. Washington, D. C.

ADALIA BIPUNCTATA LINN., and its varieties.—Although the useless multiplication of scientific names is an impediment to the student, it seems desirable that well marked varieties should be designated by a name. The names of such varieties are of course subject to the rules of priority and I was therefore surprised to find in reading the interesting article " An Abnormal Coccinellid," by A. F. Burgess (Proc. of the Tenth Ann. Meeting of the Association of Economic Entomologists), that the name *A. humeralis* of Say seems to be still in common use among American Entomologists. This should give way to *A. 4-maculata* of Scopoli, or perhaps

A. 6-pustulata of Linneus, which last differs only in the presence of an additional spot at the tip of each elytron. Careful comparison of specimens of *A. 4-maculata* from England and France, and the description in Weise's tables of European Coccinellidæ (Zeitschrift fur Entomologie, Breslau, 1879), with our *A humeralis* proves their identity. Specimens in my collection are from Worcester, Southbridge, Chicopee, Mass., and Brattleboro, Vt. Two specimens collected by Dr Geo. Dimmock in Springfield, Mass., are of the form *A. 6-pustulata.*

I also have a specimen with the red humeral and apical spots present, but without the median pair of spots, thus corresponding with the European variety, *A. Simoni* of Weise.

FREDERICK KNAB.

Entomological Literature,

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in HEAVY-FACED TYPE refer to the journals, as numbered in the following list, in which the papers are published; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French- German or Italian, this fact is indicated in brackets.

4. The Canadian Entomologist, London, Ont., '99.—**5.** Psyche, Cambridge, Mass., April, '99—**6.** Journal of the New York Entomological Society, March, '99.—**8.** The Entomologist's Monthly Magazine, April, '99.—**11.** The Annals and Magazine of Natural History, London, March, '99.—**12.** Comptes Rendus, L'Académie des Sciences, Paris, March 6, '99.—**21.** The Entomologist's Record, London, March 15, '99.—**22.** Zoologischer Anzeiger, Leipsic, '99.—**35.** Annales, Société Entomologique de Belgique, Brussels, xliii, 2, March 6, '99.—**40.** Societas Entomologica, Zurich-Hottingen, '99—**51.** Novitates Zoologicæ, v. 4, Tring, England, Dec. 31, '98.—**60.** Comunicaciones, Museo Nacional de Buenos Aires, i, 2, Dec. 17, '98.—**68.** Science, New York, '99.—**82.** Centralblatt für Bakteriologie, Jena, '99.—**84** Insekten Börse, Leipsic, '99.—**87.** Revue Scientifique, Paris, '99.—**102.** Proceedings, Entomological Society of Washington, iv, 3, '99.—**103** p. Occasional Papers, California Academy of Sciences, vi, San Francisco, Feb. 28, '99.—**104.** Mittheilungen, Naturhistorisches

Museum in Hamburg, xv, '98.—**105**. Videnskabelige Meddelelser, Naturhistoriske Forening i Kjobenhavn. Copenhagen, '98.—**106**. Buletinul Societatii de Sciinte din Bucarescu, Romania, vii, Bucarest, '98.

The General Subject.—Anon. Gustav Schoch [obituary], portrait, **84**, March 16.—Berg, C. Substitution of generic names, **60** c.—Bethune, C. J. S. The rise and progress of entomology in Canada, Transactions, Royal Society of Canada (2) iv, 4, Ottawa, '98.—Cockerell, T. D. A. Color in nature, **68**, March 24 — Kunckel d'Herculais. On moulting in insects considered as a means of defense against animal or vegetable parasites; special roles of tracheal and of intestinal moults, **12**.—Pauls. Experimental zoological studies of Dr. M. Standfuss, **40**, March 15 — Poulton, E. B. The instincts of wasps as a problem in evolution, figs., Nature, London, March 16, '99.—Schupp, A. On the "place-sense" of insects, **84**, March 2.—Viré, A. The subterranean world: the blind animals, figs., **87**, Feb. 25.—Walsingham. Transmission of natural history specimens abroad by sample post, **8**.

Economic Entomology.—Anon.—Abstract of recent publications, Experiment Station Record, x, 6. 7. U. S. Dept. Agriculture, Washington, '99.—Berg, C. On the enemies of the migratory locust (*Schistocerca paranensis* Burm. [in Spanish], **60** c. —Clement, A. L. On a retarded escape from the cocoon of *Attacus cynthia*, Bulletin, Société Nationale de Acclimatation de France, Paris. March, '99.—Levat, L. A. The disappearance of the bird and the multiplication of the insect, **87**, March 18.—Lounsbury, C. P. Report of the Government Entomologist for the year 1897. Cape of Good Hope Dept. of Agriculture. Cape Town, 1898; Entomology, figs., The Agricultural Journal published by the Department of Agriculture, Cape of Good Hope, xiv, 4. Cape Town, Feb. 16, '99.—Lowe, V. H. i. The raspberry saw-fly, ii. Preliminary notes on the grape-vine flea beetle, 7 pls., Bulletin No. 150. New York Agricultural Experiment Station, Geneva. N. Y. Dec., '98. Two destructive orchard insects: i. the apple-tree tent-catterpillar; ii. spraying experiments against the spring canker-worm, figs., 4 pls., Ibid. Bull. No. 152.—Marpmann. On the occurrence of mites in urine, **82**, March 13.—Nutall, G. H. F. The mosquito-malaria theory, **82**, March 13, etc.—Sagnier The San José scale, Bulletin des seances, Société National d'Agriculture de France, Paris, Feb., '99.—Smith, J. B. Report of the Entomological Department of the New Jersey Agricultural College Experiment Station for the year 1898. N. J. Agr. Col. Exper. Stat. Rep. 1898. pp. 371-467, 15 figs. Trenton, '99.—Webster, F. M. A serviceable insectary, 2 pls., **4**, April.

Arachnida.—Berg, C. On *Thelyphonus maximus* Tarnani, **60**c. —Hentschel, E, Contributions to knowledge of spiders' eyes, 2 pls., Zoologische Jahrbücher, (Abtheil. Anat. Ontog) xii, 3, Jena, Feb. 22, '99.—Kraepelin, K. New pedipalpi and scorpions of the Hamburg museum,* 104.—Pocock, R. I. The geographical distribution of the Arachnida of the orders Pedipalpi and Solifugæ, maps, Natural Science, London, March, '99.—Sorensen, W. Arachnida Groenlandica (Acaris excepta) [in Danish],* 105.—Supino, F. Considerations on the classification of the *Ixodes*, Atti, Societa Veneto-Trentina di Scienze Naturali, (2), iii 2, Padua, '99.

Myriopoda.—Cook, O. F. The Diplopod family Striariidæ,* 2 pls., Proceedings, U. S. National Museum, No. 1169, Washington '99; African Diplopoda of the family Gomphodesmidæ, 7 pls., Ibid. No. 1170, '99.—Silvestri, P. New Argentine Geophiloidea [in Latin] 60 c.

Thysanura.—Silvestri, F.—First notice on the Argentine Thysanura [in Spanish], 60 c.

Orthoptera.—v. Brunn, M. Parthenogenesis in Phasmidæ observed by a transmarine merchant, 104.—Burr, M. On the abbreviation of organs of flight in Orthoptera, 21.—McNeill, J. Notes on Arkansas Truxalinæ,* 4, March; Arkansas Melanopli, ii,* 5.—Scudder, S. H. The Orthopteran genus *Schistocerca*,* Proceedings, American Academy of Arts and Sciences, xxxiv, 15, Boston, '99; Supplement to a revision of the Melanopli,* 3 pls., Proceedings, Davenport [Iowa] Academy of Natural Sciences, vii, '99.

Neuroptera.—Banks, N. A classification of the North American Myrmeleonidæ,* 4, March.—Kellogg, V. L. Mallophaga from birds of Panama, Baja California and Alaska,* 4 pls., 103 p.—Kellogg, V. L. and Chapman, B. L.—Mallophaga from birds of California,* 5 pls., 103 p.—McLachlan, R. Notes on certain palæarctic species of the genus *Hemerobius*, figs., 8.—Snodgrass, R. E. The anatomy of the Mallophaga, 8 pls, 130 p.—Voinov, D. N. Digestive epithelium of the nymphs of *Æschna*, 106; Physiological researches on the digestive apparatus and the adipose tissue of Odonate larvæ, 2 pls., 106.

Hemiptera—Cockerell, T. D. A. A date-palm scale insect, 68, March 17.—Cockerell, T. D. A. and King, G. B. An apparently new *Lecanium* found on white cedar,* 5.—Dolby-Tyler, C. H. *Lecanium longulum* Douglas parasitized by *Lecanobius cockerelli* Ashmead. Secondary parasite *Holcopelte*, n. sp., Ashm, 8.—Howard, L. O. The odor of Coccidæ, 4, April.—Hunter, S. J. The Coccidæ of Kansas,* 7 pls, Kansas University Quarterly, viii., 1, Lawrence, Kan., Jan., '99.—Johnson, W. G. The odor of Coccidæ, 4, April.—King, G. B. Two new Coccids from Bermuda, 5.—Montandon, A. L. A new form in the genus *Ranatra*, description of a new species, 106; Hemiptera cryptocerata, notes and descriptions of new species, **106.**—Montgomery, T. H., Jr. Chromatin reduction in the Hemiptera: a correction, **22**, Feb. 20.—Quaintance, A. L. New or little known Aleurodidæ, ii,* figs., **4**, April.—Schwarz, E. A. Note on the Cedrela Psyllids (genus *Freysuila* Aleman),* **102**, March 16.

Coleoptera.—Berg, C. Description of a new genus of Cerambycidæ of the Argentine Republic [in Latin], **60** c.—Bordas, L. Anatomy of the anal glands of the Coleoptera of the tribe Brachininæ, figs., **22**, Feb 20.—Chagnon, G. A chase for Coleoptera at Boucherville. Le Naturaliste Canadien, Chicoutimi, Quebec, Feb., '99.—Champion, G. C. A list of the Rhipidophoridæ and Œdemeridæ supplementary to the "Munich" Catalogue, **35**.—Dierckx, F. Researches on the defensive glands of the bombardier Carabidæ, **12**.—Fall, H. C. Synopsis of the species of Acmæodera of America north of Mexico,* **6**.—Heymons, R. The development of wings in the larvæ of *Tenebrio molitor* L. (transl?), **21**.—Linell, M. L. Descriptions of some new species of North American heteromerous Coleoptera [posthumous],* **102**, March 7.—Planet, L. Monographic essay on the Coleoptera of the genera *Pseudolucanus* and *Lucanus*, Le Naturaliste, Paris, March 15, '99.—Schenkling, C. On the habits of our Apions, **84**, March 9, 23.—Wickham, H. F. The Coleoptera of Canada: xxi. The Pythidæ of Ontario and Quebec, figs., **4**, March; xxxii., Supplementary remarks to earlier papers, figs, **4**, April.

Diptera.—Kellogg, V. L. The mouth-parts of the nematocerous Diptera, iii, figs., **5**.—Lundbeck, W. Diptera Grœnlandica,* figs., 2 pls.. **105**.—Robertson, E. H. The singing fly [Syrphidæ]. Science Gossip, London, April, '99.—Rothschild, N. C. Contributions to the knowledge of the Siphonaptera, 3 pls., **51**.

Lepidoptera.—Beutenmüller, W. Notes on the American forms of *Euchloe* Hubner, **4**. March.—Butler, A. G. A revision of the Pierine genus *Huphina*, with notes on the seasonal phases and descriptions of new species, **11**.—Chapman, T. A. British Lepidoptera, Entomologist, London, March, '99.—Cockerell, T. D. A. Notes on some New Mexico butterflies, **4**, March; On a synonymic catalogue of the North American Rhopalocera by Henry Skinner, **68**, March 10.—Druce, H. Descriptions of some new species of Heterocera from Tropical America, Africa and the Eastern Islands,* **11**.—Dyar, H. G. On the larvæ of North American Nolidæ, with descriptions of new species,* **4**, March; The life-histories of the New York slug-caterpillars, xviii., 1 pl, **6**; Life-history of *Diphthera fallax* H.-S.; Spathulate head setæ on the larva of *Chamyris cerintha* Treits, **5**.—Dyar, H. G. and Chapman, T. A. Color change in the adult larva of *Scoliopteryx libatrix*, just previous to pupation, 21.—Fabre J. H. Entomological souvenirs: i. The great peacock; ii. The *Bombyx* of the oak, Archives de 'Zoologie Generale et Experimentale, (3) vi. 3, Paris, '98.—Fischer, E. Critical experimental researches on the occurrence per cent. of *Vanessa* aberrations produced by intense cold, 40. March 1.—Grote, A. R. Synonymy [of Cochlidionidæ, *i e.*, Limacodidæ, etc.], 4, March.—Hanham, A. W. A list of Manitoba moths, part ii, 4, March.—Heath, E. F. Manitoba butterflies, 4, April—Heyer, E. Hybridation among Bombycidæ, 40, Dec 15, '98—Kaye, W. J. Collecting Lepidoptera in Trinidad, 21.—v Linden, M., Friedel, E. Are flying butterflies followed by birds? Naturwissenschaftliche Wochenschrift, Berlin, Feb 5, 19, '99—Mackenzie, J. D. B. F. A preliminary list of the moths of Miramichi [New Brunswick], with notes thereon Proceedings of the Natural History Association of Miramichi, No 1, Chatham, N. B, 1899.—Moore, F. Lepidoptera Indica, part xxxv. London, Lovell Reeve & Co. 1898. Rec'd March 13, '99 (Vol iii, pp. 217–232, pls. 271–278. Nymphalinæ-Limenitina).—Rothschild, W., and Jordan, K. A monograph of *Charaxes* and the allied Prionopterous genera. 11 pls., figs., 51.-Smith, J. B. Notes on *Scotogramma* and *Oncocnemis*, with descriptions of new species,* 6; Description of the gopher moth,* 4, April.—Standfuss, M. Summary of the temperature and hybridation experiments hitherto undertaken [on Lepidoptera], 84, March 16.—Urech, F. Notice and critical remarks on terminology, and on evolution of heat and color in aberrations of *Vanessa io* and *urticæ* produced by me, figs, 22, March 13—Verson, E. The evolution of the intestinal tube in the silk worm, ii, Archives Italiennes de Biologie, xxx. 3, Turin, '98.

Hymenoptera.—Ashmead, W. H. Super-families in the Hymenoptera and generic synopses of the families Thynnidæ, Myrmosidæ and Mutillidæ, 6—Dolby-Tyler, C. H. See Hemiptera.—Harrington, W. H. Six new Ottawa Proctotrypidæ, 4, April.—Kokonyew, N. On some preoccupied names of Braconidæ, 35.—Konow, F. W. New contribution to the synonymy of the Chalastogastra. Entomologische Nachrichten, Berlin, March '99.—Poulton, E. B. See the General Subject.—Budow. Some exotic bees' buildings, 84, March 23, etc.—Wasmann, E. *Lasius fuliginosus* as a predatory ant, 22, Feb. 20.

DOINGS OF SOCIETIES.

At the March meeting of the Feldman Collecting Social held at the invitation of Dr. Skinner at his residence, 716 N. 20th Street, twelve members and two visitors were present.

Prof. J. B. Smith recorded a specimen of *Phengodes laticollis* from New Jersey, it being new to the State.

He also exhibited a series illustrating the variation of *Crocota aurantiaca*. They showed a greater range of variation than the speaker had ever known in any other species of Lepidoptera. Knowledge of the life history will be necessary in determining whether one or more species were represented.

Mr. Liebeck referred to a previous communication on *Plesiobaris albilatus* and stated he had taken two specimens at Buena Vista, N. J. They were beaten from the yellow daisy.

Mr Johnson showed hickory twigs girdled in the form of a spiral by an unknown larva

Mr Liebeck read a communication from Prof. Caulder on the variation of *Cicindela scutellaris*. The two varieties *C modesta* and *C. rugifrons* occurred simultaneously, and were taken in copulation at Warwick, R I.

Prof. Smith said the varieties of this species occurred simultaneously at Manchester, N. J.

Dr Skinner referred to the large number of species of lepidoptera, which had been taken by collectors at Miami, Fla. He has recorded about seventy species of diurnal lepidoptera, all taken in about one month. He showed two specimens of *Papilio troilus*, from Allen Co., Fla., which differ considerably in markings from the typical form. He also exhibited *Papilio aliaska*, a geographical race of *Papilio machaon*, a European species, *aliaska* occurring in Alaska Other species of *Papilio* were shown, including *Papilio turnus*, whose variations were pointed out. The same speaker read a paper on Philadelphia Entomologists and Entomology as follows:

"The 'Quaker City' has raised a standard of entomological work under which some of our friends seem at times restless. It must be remembered that entomology is no new thing in Philadelphia, and our city was the cradle of the study in this country. The father of American Entomology, Thomas Say, was born here in 1787, and in 1812 became a member of the Academy of Natural Sciences of Philadelphia, and 'turning his back on the financial world as it were, began his entomological labors in earnest.' Ever since that time entomology has flourished and men of mark have made the city famous as a centre for the study. In 1859 the first Entomological Society in America was founded, and it still flourishes, along with its sister organizations, the Entomlogical Section of the Academy and the Feldman Social. I said we had raised a standard of work or technic, and perhaps we deserve no credit for this as we have had the benefit of time and the transmitted training and experience of such men as Say, Melsheimer, Haldeman, Leconte, Horn, Feldman and other bright lights of Science. In addition to all this we have fine libraries, and a number of the best known and oldest scientific societies on this continent; in fact there is an atmosphere of science which allows no decadence. We are particular and like to see things done properly, and when they are not, and our friends and correspondents complain that we are fussy and hypercritical, it 'jars' us. If we are lepidopterists we like to see the scales on the wings where nature has placed them; we like to see the color and character of the thoracic hair of the Hesperidæ; we know that it is an anatomical fact that butterflies and moths each have two antennæ; we don't like Sphinx pins in Lycænidæ and Lycæna pins in Sphingidæ; we like the specimen pinned through the middle of the thorax and nowhere else, and not at an angle of 45°; we like specimens symmetrically spread at the same height on the pin and with the antennæ parallel, and on the same plane as the costa of the fore-wing; we object to pin labels on specimens as big as bill posters; we are never so tired that we can't write a few numbers for specimens, and don't resort to the very largest numbered calendar we can find; we are not satisfied to know what State an insect comes from, as there is some difference in the character of the country around San Francisco, the top of Mt. Whitney or the Mohave desert for instance; we are also curious to know whether our butterfly was taken Christmas day or the Fourth of July; we do not put specimens in the same shape and make of papers that the confectioner uses for " sour balls;" we are satisfied with one specimen in a paper, as we like a pair of antennæ on each of them. As to packing insects for transportation, we know something about that, but it is a long story. We have collections here in the different orders that should be seen to be appreciated and collectors that are not surpassed anywhere in America. We are proud of our record and can't lower our standard for anybody, and our friends North, East, South or West must do as well or drop out of the race. As to collectors, we have them in almost every order, and they know their work well. Take a trip with me to the 'Neck' or Anglesea, and watch our jovial fellow member, H. W. W., coat off, white umbrella in hand, beating for Coleoptera. Where is his equal as a keen collector, who gets there in spite of every obstacle? Go with me on a spring day to Clementon and see our friend, P. L, taking in *Pamphila metea*, *Thecla niphon*, *Syneda graphica* and other good things which, when spread, will go in one of the best ordered collections in the country. Our Dipterist is an indefatigable collector and finds new families and genera right across the Delaware. There are few like him. We have an Orthopterist and Hemipterist, who is a mighty good fellow too, but he won't work very hard so long as the other people bring him plenty of material for study. In the Odonata we have a collector of repute, who is leading in the race in this country, and we predict that it won't be long before the gentleman will be the leading authority of the world in his specialty. I must now refer to 'my young friend,' as a Washington man puts it - he is young in years, but a perfect terror on new species of Hymenoptera, which he claims, of course, are all good. We also predict a great future for him; he may be young in years now, but will soon be a grey-beard in science. We have another lepidopterist who finds any species of butterfly in North Carolina you may mention, and the object of his life is to prove we have but a single species in America, and that it is found in but one place in the world, and that place is Cranberry. It is always customary to speak of your neighbors; what shall we say of our great collecting ground, Jersey and its State Entomologist? I said State Entomologist It does not follow that a State Entomologist is necessarily an entomologist, but Jersey, is the proud possessor of an entomologist, and an entomologist is one who has a broad guage knowledge of insects, and also of the economy of insects. The best compliment I can pay our friend from "Spain" is to say that entomologists are scarce. It does not follow from what I have said that these are the only good men we have in the societies mentioned. Those to whom I have alluded may be more conpicuous by reason of their fondness for the "annex" or other reasons, but space and time do not permit me to mention all, but they are equally great." WILLIAM J. FOX, Secretary.

A meeting of the Entomological Section of the Academy of Natural Sciences was held March 23d, Mr Laurent, Director, presiding. Eleven persons were present. Dr Calvert stated that he had recently been studying some galls found in the roots of the poison ivy. Some of the roots and galls were preserved in a flower pot and some were placed in alcohol. From these latter a number of dipterous larvæ were taken. Some of the live galls were opened and two flies found. A living fly was also reared from the galls. There were also found some small Hymenopterous insects, presumably Chalcids. These were parasitic on the flies The flies belong to either *Cecidomyia* or *Mycetophila*. Mr. C. W. Johnson exhibited specimens of the family Acroceridæ. All of these insects are extremely rare, the speaker having taken only but two or three specimens. Very little is known of their life habits. Those known are parasitic on spiders or their cocoons. Dr Skinner spoke of the possibility of flies carrying the cholera bacillus and quoted as follows from an article by the late Dr. John A. Ryder:

"Suppose a case; imagine a cholera victim upon street or anywhere else vomiting; the flies present are attracted and drink until sated, and have their feet and mouth parts wetted with the vomit containing the germs. They then perhaps fly out in the street, take a place on a horse-car, ride several miles, dismount, fly into another house where the family is at dinner and contaminate the food set before them with the germs of the cholera carried in the mouth parts and feet of the insects. Some of the family sicken and die, yet no one of them will ever, perhaps, suspect that the flies may have carried the germs, as supposed above, for miles from some other case. The safeguards are to at once clear away, disinfect with corrosive sublimate solution or scald the spots where the vomit has been thrown, and to be vigilant in the use of fly-screens." During the civil war, Professor Joseph Leidy pointed out, with beneficient results, that the common house-fly was instrumental in spreading the contagion of hospital gangrene. The same speaker stated that he thought it probable that there was in nature an almost mathematically exact percentage of immunity from all diseases in man and the lower animals. This accounts for the fact that many people drink water contaminated with the bacillus of typhoid fever and do not get the disease. In insects the same idea holds good, as a certain amount of immunity from parasitism prevents the destruction of the species. This immunity may vary from year to year, but will probably average about the same. Dr. John B. Smith said that the general law of immunity and parasitism was of interest in economic entomology, the balance between organisms being nicely adjusted, and seldom materially disturbed. The larva of the moth, *Teras oxycoccana*, is never parasitized in the first brood, frequently in the second brood, and almost certainly in the third brood. The life history of the "Elm Leaf Beetle" was mentioned, and a statement made in regard to the effect of weather in favoring parasitic disease on this species. Mr Johnson mentioned the effect of cold in driving away *Heliconius charitonius* from the vicinity of St. Augustine, Fla. Mr. Laurent exhibited a blown larva of *Tolype velleda*, and spoke of its wonderful resemblance to the twig on which it was found. He also reported the capture of a ♀ of *Pamphila mystic* at Mt. Airy, Philadelphia, on the 5th of June. HENRY SKINNER, Recorder.

The regular meeting of the Newark Entomological Society was held Sunday, March 12th, Vice President Kemp presiding, and 12 members present.

A series of the genus *Datana* and *Crocota* were exhibited by the most of the members for study and identification.

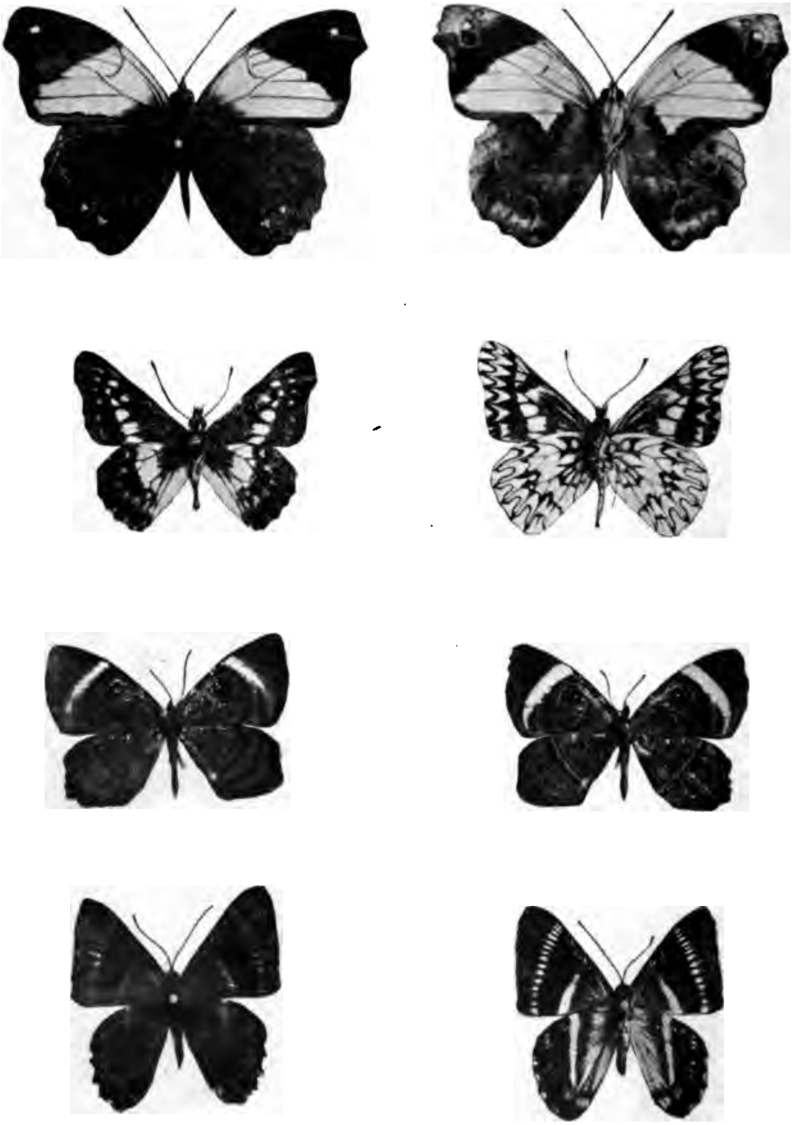
Prof. Smith exhibited a series of *Eubaphe* (*Crocota*), illustrating the species found in this territory. Especial attention was called to the varieties of *aurantiaca* and the differences exhibited, not only in the marking, but to some extent in the wing form. It was suggested that no broods of the species had ever been raised, and that this would give a good chance for an original piece of work that could be comple [illegible]. The common forms in his experience are *rubi* [illegible] *ornis*, which shade into each other very gradually. The white spotted form he has not taken. The others had in New Jersey.

Mr Kearfott reported the capture of *Xylina vuimoda* and *Anisopterix pometaria* at Montclair, N. J., March 5, 1899.

Mr. Angleman exhibited a series of the new species *Callimorpha triangulata*, taken near Newark, N. J., in the latter part of June.

Mr. Kearfott remarked that he had taken a specimen of the same species at Erie, Pa., July 18th.

The family Notodontidæ was selected for study and comparison at the next meeting. Adjourned. A. J. WEIDT.



NEW LEPIDOPTERA (Mengel)

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

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CALIFORNIA BEES OF THE GENUS NOMADA.

By CARROLL FOWLER, Berkeley, Cal.

Among the most characteristic of our early spring bees are those of the genus *Nomada*, which are to be found rather of the University of California. The species exhibit a great deal of variation in color and also in the wing venation. The latter character cannot be used at all in classifying because in abundantly upon our yellow wild flowers. This article is based upon a study of the species *Nomada* in my collection and that the single species *bisignata*, of which we have a large series all the extremes of variation in the venation are to be found. The color pattern, although variable, seems to be the most reliable character. The following synopsis is an attempt at the natural classification of the species known to me, with the probable position of the other California species indicated in foot notes.

Bright yellow markings on black ground, with very little brown.

Second abdominal segment broadly yellow; two large yellow spots on metathorax.* . . . . VINNULA.

Yellow on second segment narrowed or interrupted; metathoracic spots feeble, usually wanting.

Legs largely yellow; fifth abdominal segment almost entirely yellow. Yellow band on second abdominal segment not interrupted.

Second joint of the flagellum slightly shorter than the third. . . . . CIVILIS.

Second joint of the flagellum about one-third the length of the third. . . . . RIVALIS.

Legs black with brown markings; broad basal portion of the fifth abdominal segment black.

Yellow bands of the abdomen entire. . . FRAGILIS.

Yellow bands on segments 2–4 broadly interrupted. INTERRUPTA.

Reddish brown and black, sometimes with pale yellow lateral markings on the abdomen.

Second abdominal segment with large whitish, lateral markings connected by a narrow, medially interrupted line near the posterior edge. . . CROTCHII.

Lateral markings, when present, yellowish and not extending medially.

On the sides of the abdominal-segments a large basal black spot crowding the yellow into a narrow oblique line. . . . . OBLIQUA

Black spots small or wanting.

Broad base of segments 1–4 black. . . OBSCURA.

Little or no black on base of segments 1–4.

Fifth abdominal segment with two yellow spots or a band.†

Scutellum sub-bilobate, with yellow spots. VINCTA.

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* *Citrina*, *edwardsii* and *suavis*, which are unknown to me, also appear to go here *Suavis* differs from *vinnula* in that the fifth abdominal segment is entirely yellow; *edwardsii* from both of these, in having yellow markings on the disc of the thorax; and *citrina* from all these, in that the second joint of the flagellum is shorter than the third.

† *Opposita* may be distinguished by its pale ferruginous color from *vincta* and *lepida*, which are dark.

Scutellum not prominent, black. LEPIDA.
No yellow on fifth segment.
Thorax black, abdomen reddish. MELLIVENTRIS.
Thorax and abdomen reddish.
Unicolorous . . . . RUBRA.
Marked with black, abdomen often with lateral yellow spots. BISIGNATA.

1. NOMADA VINNULA Cress. Fresno, Cal., May 4, two specimens collected upon *Melilotus indica* Alhambra and Pomona, Los Angeles county, June, five specimens (H. O. Woodworth). Previously recorded from Nevada.

2. NOMADA SUAVIS Cress. California. Unknown to me.

3. NOMADA EDWARDSII Cress. California. Unknown to me.

4. NOMADA CITRINA Cress. California. Unknown to me.

5. NOMADA CIVILIS Cress. Berkeley, Cal. (H. O. Woodworth), March 28. Four males, collected upon *Ranunculus californica* and *Brassica campestris*. Previously recorded from Colorado.

6. NOMADA RIVALIS Cress. Berkeley, Cal. (H. O. Woodworth), April 18. Two males.

7. NOMADA FLAVIPES Prov. Los Angeles, Cal. Unknown to me.

8. NOMADA FRAGILIS Cress. Berkeley, Cal., May 19. One male. Previously recorded from Colorado.

9. NOMADA INTERRUPTA, n. sp.

7.5 mm. Black, abdomen with interrupted yellow bands.

♂ Head black, densely punctured, clothed with thin, brownish pubescence; lower anterior orbits, anterior margin of the clypeus, labrum and mandibles (except tips) yellow; antennæ black above, brown beneath, third joint about half the length of the fourth. Thorax black, immaculate, clothed with thin brownish pubescence; legs black, anterior trochanters at apex, their femora and tibia beneath and at apex, the intermediate femora on apical portion beneath and at apex, the posterior femora and tibia at their apices, and the tarsi (excepting the posterior metatarsi) yellow; the claws are black. Abdomen black, with very short, thin, pale pubescence, longer on apical segment; first segment with a small yellow spot on each side, the remaining segments with yellow bands broadly interrupted on the middle of 2–4 and narrowly on 5; a small black spot near the lateral apical margins of segments 4–5. Ventor yellow, with irregular black markings.

Habitat, Berkeley, Cal. (H. O. Woodworth), March 16. One specimen.

10. Nomada crotchii Cress. San Mateo, Cal., April 13. One specimen.

11. Nomada obliqua, n. sp.

7 mm. Small, black, with brownish abdomen.

♂ Head black, densely punctured, clothed with white pubescence, thin on vertex; the lower anterior and posterior orbits, the anterior margin of the clypeus and mandibles (except tips) yellow; flagellum black above, brown beneath, second joint nearly as long as third. Thorax black, immaculate, densely and finely punctured, clothed with white pubescence, thin and short on metathorax; wings dusky on narrow apical margins; legs black, with short white pubescence, longer on anterior and intermediate femora behind; anterior femora in front and behind yellow, above and beneath black; intermediate and posterior femora with a little yellow on the apical portion beneath; all the tibiæ and tarsi yellow beneath, obscurely so in the posterior pair. Abdomen smutty red, pale on apical segments, clothed with thin white pubescence, rather long and thick on apical segments; the first segment is black except a narrow subapical reddish line; the apical margin of the second, a subapical line on the third, and the base of the remaining segments black; the sides of segments 3–4, with a large black spot, following which is an elongate, oblique yellow spot. Venter black; segments 2–5 with yellow or reddish bands, more or less interrupted laterally by large black or brown spots, which are usually confluent with the basal black of the segments.

Habitat, Berkeley, Cal. (H. O. Woodworth), March 28 to April 12. Two specimens, collected upon *Ranunculus californica.*

12. Nomada obscura, n. sp.

7.5 mm. Black, abdomen with dull red bands.

♂ Head black, densely punctured, clothed with pale pubescence, thin on vertex; lower corners of the face, narrow anterior margin of the clypeus, labrum and mandibles (except tips) yellow; flagellum dull red, with a black line above, second joint about half the length of the third. Thorax black, immaculate, opaque, densely punctured, clothed with white pubescence, rather thin above and dense beneath; wings hyalin, faintly dusky at tips; legs black; underside of the femora and tibiæ of the anterior and intermediate legs, the tips of all the tibiæ, the anterior tarsi, the middle and posterior metatarsi and the apical portion of the succeeding joints yellow. Abdomen black, opaque, finely punctured, clothed with short griseous pubescence, longest on apical segments; the apical margins of the segments are dull reddish brown. Venter dull red, the apical segment and the basal portion of the first black; the broad apical margins of the other ventral segments dusky, merging into large dark spots on the lateral portion.

Habitat, Berkeley, Cal., March 18. One specimen, collected upon *Ranunculus californica*.

13. NOMADA OPPOSITA Cress. California. Unknown to me.

14. NOMADA VINCTA Say. Berkeley, Cal, May. Two specimens. Previously recorded from the Eastern, Middle and Western States.

15. NOMADA LEPIDA Cress. Berkeley, Cal., February, March and April. Twenty-six males, collected upon *Ranunculus californica* and *Brassica campestris*. Many of these specimens have the scape entirely black instead of yellow in front, and the legs generally have more black than Cresson's type. Previously recorded from Colorado, Illinois and Texas.

16. NOMADA MELLIVENTRIS Cress. ♂.

♀ Differs from the male in that the pubescence on the face is much shorter; the third joint of the antennæ is about one-half the length of the fourth.

In all of my specimens the first segment of the abdomen is black at the extreme base, both above and beneath, the two black spots mentioned by Cresson sometimes fusing with this. Sometimes there is a little black on the apical margins of segments 2–4.

Berkeley, Cal., March 15 to April 18. Ten specimens, collected upon *Brassica campestris* and *Ranunculus californica*.

17. NOMADA RUBRA Prov. Fresno, Cal. (H. O. Woodworth), April 28. Six females collected upon *Eschscholtzia californica* and *Medicago sativa*.

18. NOMADA BISIGNATA Say. Berkeley, Cal., March 15 to April 13. Thirty-six specimens, collected upon *Ranunculus californica.*

Var. RUBRICA Prov. Berkeley and Visalia, Cal., March, May, June. Seven specimens, agreeing quite well with Provancher's description, but seem to be distinctly a variety of *bisignata.*

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SOME NOTES ON COLEOPTERA FOUND ON SPECIES OF CEANOTHUS.

BY RALPH HOPPING, Kaweah, Cal.

The following list of Coleoptera has been formed from specimens collected during the past three years, 1896-7-8, on the various species of *Ceanothus* found on the Kaweah river and tributaries, in Tulare county, California.

The species of *Ceanothus* are hard to distinguish ; and, as many of these beetles are found on nearly all of the species when in flower, I have not tried to separate them.

Ceanothus is one of our prettiest flowering shrubs, varying from two to three feet at an elevation of 7,000 feet to eight and nine feet at an elevation of 1,000 feet. The flowers are generally white, but on one species they are pale blue. *Ceanothus* is variously known as ironwood, blue brush, deer brush, buck brush, snow brush, etc., and is generally one of the species that goes to form *chaparral.* The species found in this vicinity are *Ceanothus cordulatus, C. cuneatus, C. divaricatus, C. diversifolius* and *C. parvifolius. C. cuneatus,* although abundantly flowering, forms an exception, as beetles are not found on the flowers, but only on the leaves. I have found some curious color variation, due to difference in elevation, which is from 1,000 to 7,000 feet.

This list is not considered complete, as I have several undetermined species, and many will, no doubt, be added by further collecting.

I have to thank Mr. Liebeck for many of my determinations and much help.

Amphichroum scutatum Fauv.—Very common at an elevation of 4,000 to 6,000 feet.

Anthobium aurifluum Fauv.—Found with *scutatum*. These two species are found in the flowers in immense numbers.

Exochomus marginipennis Lec.—Rare; from 1,000 to 3,000 feet; on the leaves.

Anthrenus scrophulariæ Linn.—Common from 1,000 to 6,000 feet. At 1,000 feet this species has a white saddle marking on the elytra, but the specimens taken from 4,000 to 6,000 feet are like our pretty little eastern specimens.

Anthrenus varius Fabr.—Very common from 1,000 to 7,000 feet, but varying much in size.

Cryptorhopalum apicale Mann.—Not common; 1,000 feet to 3,000. Found with the following species:

Orphilus glabratus Fabr.—A very common species at 1,000 feet, but becoming rarer as the elevation increases.

Grynocharis pilosula Cr.—Common from 1,000 to 4,000 feet. A black variety is found with this, although not common. The black variety seems to be more plentiful as the elevation increases.

Macropogon testaceipennis Mots.—Very rare. My one specimen is an odd color variation, the anterior part of the elytra being reddish, the rest black. Typical specimens are a pale color. My specimen was taken at an elevation of 4,000 feet.

Cardiophorus fenestratus Lec.—Rare. I have taken but eight specimens in eight years, at 1,000 to 2,000 feet.

Limonius maculicollis Mots.—Not common; 1,000 to 5,000 feet.

Limonius occidentalis Cand.—Very common, but most common at 3,000 and 4,000 feet.

Limonius canus Lec.—Rare; found with *Sericosomus flavipennis* Mots.

Athous axillaris Horn.—Very rare; 4,000 feet.

Sericosomus flavipennis Mots.—Very common; from 1,000 to 7,000 feet. Rarely varies, although sometimes a black specimen is found.

Perothops witticki Lec.—Very rare. One specimen at 4,000 feet.

Anthaxia deleta Lec.—Very rare. Have found but three specimens at 7,000 feet.

Acmæodera plagiaticauda Horn.—Rare. Have but three specimens, taken at 4,000 feet.

Acmæodera mariposa Horn.—Very rare, having taken but one example.

Acmæodera dohrnii Horn.—One specimen, doubtfully referred to this species, was taken with the above.

Podabrus cavicollis Lec.—Common from 1,000 to 4,000 feet.

Malachius thevenetii Horn.—Not common; found from 1,000 to 5,000 feet.

Malachius macer Horn.—A very common beetle, not often found on *Ceanothus*, but generally on a small *Bœria*.

Malachius mixtus Horn.—Very common, but, like the above, not often found on *Ceanothus*.

Microlipus laticeps Lec.—Very rare. Found on leaves at 1,000 feet.

Listrus interruptus Lec.—Common from 1,000 to 5,000 feet.

Listrus difficilis Lec.—Very common; found same as the above.

Trichodes ornatus Say.—Common at all elevations.

Hoplia callipyge Lec.—Our common rose beetle, but often found on the flowers of *Ceanothus*.

Dichelonycha truncata Lec.—Rare. Found from 1,000 to 4,000 feet.

Poecilobrium chalybæum Lec.—Not common. Found from 1,000 to 5,000 feet.

Callimus cyanipennis Lec.—Common from 1,000 to 3,000 feet.

Callimus ruficollis Lec.—Common from 1,000 to 5,000 feet.

Callimoxys fuscipennis Lec. Very common from 1,000 to 6,000 feet.

Clytus lanifer Lec.—Not rare. Found from 5,000 to 7,000 feet.

Acmæops longicornis Kirby.—Rare. I have three specimens.

Strangalia delicata Lec.—Common at 1,000 feet, but becoming rarer at higher elevations.

Leptura laetifica Lec.—Rare. Found from 5,000 to 7,000 feet.

Leptura, n. sp.—Found with *laetifica* and closely resembling it, the most conspicuous difference being in the color of the legs, which are red. while in *laetifica* they seem to be invariably black.

Leptura sanguinea Lec.—Found with the above two species. These are all rather rare beetles.

Leptura molybdica Lec.—Common. This species at from 1,000 to 2,000 feet is evidently the typical form with red epaulettes, but at 7,000 feet this beetle is invariably a dark blue all over.

Pachybrachys melanostictus Suffr.—Not common. Found on the leaves from 1,000 to 5,000 feet.

Pachybrachys lustrans Lec.—Not common. I have found three varieties of this at 4,000 feet.

Saxinis saucia Lec.—Not common. Like the above, found on the leaves, from 3,000 to 5,000 feet.

Luperodes torguatus Lec.—Common at about 5,000 feet.

Microrhopala melsheimeri Cr.—Not common, at 4,000 feet. Found on the leaves.

Odontota californica Horn. Found with the above. Not common.

Stenochidus gracilis Lec.—Common. Found from 1,000 to 4,000 feet.

Cistelo opaca Lec.—Common from 1,000 to 5,000 feet.

Isomira discolor Lec.—One of the commonest beetles from 1,000 to 7,000 feet.

Asclera discolor Lec.—Found in limited numbers at 4,000 to 5,000 feet.

Anaspis atra Lec.—Found in great quantities from 1,000 to 6,000 feet.

Anaspis collaris Lec.—Rare; 4,000 feet.

Mordella scutellaris Fabr.—Common from 1,000 to 3,000 feet.

Corphyra punctulata Lec—Found from 1,000 to 7,000 feet. Common. From 1,000 to 4,000 feet this beetle is of a straw color, and much smaller than the Alpine variety, the elytra of which are a shining black.

Cantharis stygica Lec.—Common. At 1,000 feet this is not found on *Ceanothus*, and is a vivid green, but at 3,000 to 6,000 feet is a uniform dark blue.

In the four species where I have noted color variation in the foot-hill and Alpine specimens I have not found any that were intermediate.

From the number of determinations by Dr. LeConte, his specimens must have been collected on *Ceanothus*, as many of these species are found nowhere else.

FOUR NEW SPECIES OF BUTTERFLIES FROM SOUTH AMERICA.

Levi W. Mengel, Reading, Pa.

(See Plate.)

Epiphile Zipa, sp. nov. Expanse about 2 in. Upper side of superior wings orange and dark brown. The orange darkens at base of wings to light brown ; otherwise uniform. The orange extends half way to the apex, along the anterior margin ; from the base along the sub-median nervure almost to the inner angle and thence diagonally across the wing to the costa. The orange thus makes a large triangular patch, almost surrounded by brown. The remainder of the superiors brown, uniform, with the exception of a strongly marked white spot near the apex. The inferiors are a rich blue, fading to brown along the interior and exterior margins. There are two very light blue spots in the median nervures. Along the anterior margin, half way to the apex, is an orange diffusion fading to brown, along the sub-costal nervure.

Under side of superiors very much paler than above, the orange changing to yellow, darker near base and extending along the sub-median nervure almost to the exterior margin. Remaining portion of wing very light brown, with a blue black ocellus, surrounded by a yellow edge, near apical angle. The ocellus is surmounted by a decided white spot. Inferiors pale brown, changing to light reddish brown along the inner and exterior margins. A row of well-marked ocelli extends along margin. A triangular silvery yellow spot on the costa extends almost to discoidal cell, with the apex of the triangle pointing downward.

Habitat : Neiva, Tolima, U. S. Columbia.

Archonias xeque, sp. nov. Expanse 1⅜ in. Ground of superiors dark, nearly black, with a row of well-marked white spots running from the apex to the inner margin, midway between the base and the inner angle. Also a row of smaller white spots running parallel to the exterior margin, with a few white dashes near the apex. Base of inferiors black, with a bar of spots extending from anterior margin two-thirds across the wing towards the inner margin. The upper part of this bar is white, while the remaining portion, including part in cell, is deep orange. The exterior parts are black, though not so intense as the base. A row of decided white spots runs parallel to the exterior margin. There are a few faint whitish dashes on the margin. Interior margin, white.

Under parts of superiors, general ground work black, the diagonal row of white spots of upper side showing through wing. The exterior margin is covered with a row of arrow-shaped lunules, which are yellow at apex, changing to white at inner margin. Under parts of inferiors yellow, with black diffusion near base. A serrated black line extends from apex to inner angle, making a number of toothed or arrow-shaped markings along the margin. The nervures run to the apices of these marks. Body above and below black, with abdomen yellow.

This species is nearest to *A. chrysolophana*, Stgr., on upper surface, but differs entirely in the arrangement of the white row of spots on the superiors, while the bar of the inferiors is lemon yellow, no white being present, as in *A. xeque*. The under side of *chrysolophana* is white, with only a few dashes of lemon yellow along the veins.

The under side of *A. xeque* more closely resembles the under side of *A. toca*, Doubl., than *chrysolophana*, but is again indescribably different, while the upper sides of both wings in toca are solid white, no yellow or orange being present.

Described from examples in collection of Dr. H. Strecker and the author.

Habitat: Neiva, Tolima, U. S. Columbia.

Mesosemia yaporogosa, sp. nov. Expanse 1⅜ in. Superiors greenish blue, with black apices; black extending to inner margin. A bar of white extends from the costa half way across the wing, fading into blue. Inside the white bar a band of black passes across the wing to inner margin. A large circular black spot covers part of the discoidal cell, extending, however, partly beyond. This spot is half way between the base and the apex. One-third the extent of the wing, away from the base, another black line extends from costa to inner margin. Inferiors blue, same shade as superiors, with black margins extending quite to inner angle. Two black bars pass from interior margin, meeting at inner angle, enclosing a crescent of blue. Inner margin brown.

Lower part of superiors grey brown, with white bar extending entirely across the wing. Black spot of upper side appears enclosed in oval of brown. A second oval band encloses the first. Lower part of inferiors generally brown, becoming paler towards exterior margins. Wing traversed by band of dark brown, extending from costa to inner angle, across middle of wing. Several paler bands mark wing along outer margin. A black spot appears in discoidal cell.

M. yaparogosa is nearest to *M. lamachus*, Hew., differing in color and the arrangement of bars of upper surface. The white bar is also absent in lamachus. On the under side the arrangement is totally different, besides the absence of a white bar in lamachus. Lamachus also has several ocelli and spots on under surface of superiors, while the brown ovals are absent.

Habitat: Neiva, Tolima, U. S. Columbia.

Siseme nigrescens, sp. nov. Expands 1 3-16 in. Upper side of both wings black. On the superior wing a bar of very faint white spots extend from costa to inner margin. Another bar of the same faint marks runs parallel to outer margin. Inferiors marked with two red spots near inner angle. Under parts of superiors black, with faint marks of upper side developed into well-marked white bars, the exterior row being made of separate spots, while the inner bar is solid. Base and inner margin of inferiors blue grey suffusion, passing to black. A decided white bar traverses the wing from the anterior margion almost to inner angle, while a row of faint spots, grey in color, runs parallel to outer margin. Two red spots near inner angle. Exterior margin tipped with white. Body above and beneath black, with abdomen grey.

Under parts resemble *S. caudalis*, Bates, from which, however, it differs entirely.

Habitat: Neiva, Tolima, U. S. Columbia.

THE CASTLE-BUILDING SPIDER (LYCOSA DOMIFEX).

BY J. L. HANCOCK.

The length of the adult female spider varies from sixteen to twenty-one millimeters (approximating three-quarters of an inch). Using the largest of these for a type specimen, the width of the abdomen is eight; the cephalothorax is nine in length, seven in width and four and a half millimeters in height. The cephalothorax, or forward part of the body, is dark grayish brown, with a lighter yellowish wedge-shaped band in the middle, extending nearly the entire length ; in old specimens the whole head portion is nearly uniform light gray. The middle pair of eyes (for there are three rows) are encircled with yellow hair, the extreme front being of the same color. The abdomen in old specimens is yellowish brown, obscurely marked. A median narrow dark band, visible for nearly the first half, joins a darker facing in front and gives off laterally a diagonal stripe, followed with a lighter interrupted stripe in the same direction ; the middle band shades imperceptibly behind, with a broad, indistinct band covering the whole remaining upper surface, becoming narrower and terminating at a point at the end of the abdomen ; frequently this band shows indications of being divided transversely by five faint dark yellow thin stripes ; its lateral margins are circumscribed by lighter spaces between the almost obscured stripes. Specimens just arriving at maturity have the abdomen a rich, dark brown ; the narrow stripe in front on the abdomen is lighter, the broad band is wanting ; five thin, transverse yellowish gray stripes divide the abdomen backwards, commencing with the most conspicuous one a little in advance of the middle. The abdomen often appears very dark at first glance, the markings upon it not being apparent. In the adult underneath the abdomen is pinkish yellow, the sternum is light and the lip darker. The legs increase slightly in thickness, also becoming lighter colored from the fourth to the first pair ; the first legs are light gray, yellowish toward the body, densely clothed with a few scattered long dark hairs, and the hind legs are dark or yellow, with blackish spines. The first and second legs have the last three joints—tibia, metatarsus and tarsus—black beneath ; near the body these legs are lighter, the femurs are yellowish olive. The mandibles are covered with yellow hair on the front.

I have recently examined a male specimen of *Lycosa nidifex*, Marx, kindly sent to me by Mr. Nathan Banks. The specimen, I am informed, has similar castle-building habits such as described in ENTOMOLOGICAL NEWS, February, 1899. The type of *nidifex* has not been recovered in the Marx collection, but Mr. Banks sent me the above specimen, taking it to be that species. It is closely allied, if not identical, with my *domifex*, and though the markings are different they are not any more, perhaps, than attains in different sexes of the *Lycosidæ*.

The points wherein the male *nidifex* differs from the description given above are as follows: There is a dark band one-third the width of the abdomen on the venter and the whole coloring above and below on the body is darker; a noteworthy difference occurs on the legs underneath; the third and fourth joints of all the legs are darkest, getting lighter toward the extremities, while in *domifex* the dark markings are confined to the last three joints of the first and second pair of legs. There are apparently no markings on the upper surface of the abdomen in the alcoholic example under consideration.

It is hoped a study of more material the coming summer will bring forth new light on these interesting members of the *Lycosidæ*.

NEW MYRMELEONIDAE.

By Nathan Banks

Acanthaclisis hageni n. sp.

Very similar to *A congener*, and may be best described by comparison with that species. The vertex is shining black (not shining in *A. congener*) and there are transverse lines of white hairs, and two patches of them behind; pronotum has two small spots in front farther apart than in *A. congener*, and outside of them two others, near the middle of each side is a large pale spot, and a transverse one each side on the hind margin, (in *A. congener* there are two pale spots in front, a row of three each side, and two transverse ones on the hind margin); on the middle of mesothorax in front there are two large oblique pale marks (in *A congener* there are four subequal spots forming a square); on mesoscutellum the pale spots are much larger. The veins of the wings are less interrupted with pale and those of the posterior part are almost wholly black. The wings are narrower than in *A congener*, especially noticeable in the middle of the hind border. The radial sector has ten branches, seven before the last transversal before the pterostigma (in *A congener* there are eight branches, five before the last transversal before the pterostigma. Phœnix, Arizona, May [Dr. Kunze].

Brachynemurus maculosus n. sp.

Face yellow, between and above antennæ a large dark area from eye to eye, sometimes showing a pale double spot in the center, the dark is continued over upon the vertex in the middle; antennæ brown; palpi pale, last article dark at tip; prothorax moderately short, yellow, with four brown lines, the lateral ones only reach the sulcus; anterior part of mesothorax mostly dark brown, with a pale narrow stripe each side, each lateral lobe shows a small pale spot above the base of fore wing; scutellum of mesothorax pale with a medium dark stripe (not one each side as in most species); metathorax pale with a median brown spot forked and divergent in front, sides dark brown; pleura of thorax almost wholly dark; legs pale yellow, without marks except base and apex of the tarsi dark; abdomen pale at base, lineate with dark, dark at tip; wings hyaline, costals forked only near tip, three transversals before the radial sector, pterostigma pale, dark on base; veins dark, interrupted with pale, except the vein behind radial sector which is wholly pale, at one end of most of the transversals (including those ending on radial sector and fork of same) there is a large dark spot, also one at end of each costal and a rather larger mark terminating the pale vein near the tip of wing; hind wings much less marked. Length to tip of wings, 20 mm.

Tehama, California, August [A. P. Morse].

This species belongs in the group of *B. abdominalis* which may be distinguished by having a median stripe on the mesoscutellum, and a wholly pale vein behind the radial sector. The four species may be separated as follows:

1—Radial sector wholly dark, four stripes upon the pronotum....2
Radial sector more or less pale, a stripe on each side of pronotum,.. 3
2—Spots along radial sector, small species...............MACULOSUS.
No spots along radial sector...........................BLANDUS.
3—Spots scattered, basal part of radial sector interrupted with dark...ABDOMINALIS.
Spots mostly arranged along the radial and median veins, basal part of radial sector wholly pale.......................TENUIS.

Brachynemurus blandus Hag.

B. coguilletti Currie.

There is, I think, no doubt that Currie's species is identical with Hagen's. The peculiar markings of the pronotum in *B. coguilletti* agree with those ascribed by Hagen to *B blandus*, and to no other form. There is considerable variation in size in this as in other species of the genus.

Brachynemurus pallidus n. sp.

Pale yellowish, dark around bases of antennæ, two dark spots on vertex, tips of palpi dark, antennæ pale brownish; prothorax shows only the lateral stripes and these are very indistinct, but each tip shows a prominent dark dot at the sulcus; thorax with a few dark spots, no signs of marks on mesoscutellum; abdomen pale yellow, with a median and lateral dark line, apex obscure; legs pale yellow, unmarked, except the joints of tarsi are tipped with dark; wings clear, without marks, veins dark, interrupted with pale, but without any adjoining clouds, pterostigma darker at base; hind wing similar to fore wing; costals forked only near the pterostigma one to three transversals basad of radial sector. Length ♀ 18 mm, expanse 37 mm. Phœnix, Arizona, September [Dr. Kunze].

Nearer to *B. minusculus* than to any other species, but easily separated from that by the lack of median lines on the pronotum, unmarked hind femora, etc.

——o——

SOME NEW SPECIES OF ATHYSANUS.

By E. D. Ball, Fort Collins, Colo.

Athysanus frigidus, n. sp.

General appearance of *A. exitiosa* broader and shorter. As broad as *obsoletus*, with a rounder vertex. Length, ♀ 4-4.5mm, ♂ 3.5mm; width, ♀ 1.6mm, ♂ 1.2mm.

Vertex two and one half times wider than long, half longer on middle than against eye, the surface sloping and broadly rounding to the tumid front; ocelli distant from eyes; front wider than long, twice wider at apex than the parallel margined clypeus; pronotum half longer than vertex, lateral margins very short, humeral margins long, rounding; elytra slightly longer than the body in both sexes, narrowing behind, venation normal, apical cells rather short.

Color: Grayish or brownish white; a large oval spot on either side the middle of the anterior margin of the vertex, a large round one between the ocelli and the eyes. sometimes three small ones on the disc, forming a triangle, a pair of elongate marks on the pronotum back of the anterior margin and a pair of spots on the disc of the scutellum, black; elytra covered with a whitish "bloom," the nervures obscure; face light, a pair of large spots below those on the vertex, another pair, irregular in shape, near the apex of front. Light colored specimens may lack some of the spots on face, while darker ones—and the males as a rule have brown stripes—between the light veins of the elytra.

Genitalia: Female, ultimate ventral segment twice longer than penultimate, shallowly emarginate posteriorly, with a broad, slightly, roundingly, bilobed, median tooth: pygofers twice longer than wide, equaling the ovipositor; male, ultimate ventral segment long, half longer than valve, valve broad, obtusely rounding, plates broad at base, regularly narrowing to the slightly divergent points, scarcely twice longer than the valve.

Described from numerous specimens collected at Fort Collins, Colo., and back into the lower foot-hills. Found only on *Artemisia frigida*, to which the white color and powdery "bloom" of both larvæ and adults well adapt it.

Athysanus arctostaphyli, n. sp.

Shorter and stouter than *A. instabilis*, with shorter elytra, deep chestnut brown; vertex yellow, with transverse fuscous lines. Length, ♀ 4mm, ♂ 3.5mm; width, ♀ 1.6mm, ♂ 1.2mm.

Vertex obtusely angulate, twice wider than long, not quite two-thirds as long against eye as on middle, anterior margin thick, rounding to the face; front a little longer than wide, but little wider at the apex than the clypeus; pronotum strongly arcuated anteriorly, the side margins very short; elytra short and stout, reaching the end of the abdomen, appendix minute, apical cells short, sometimes a second cross nervure between the sectors.

Color: Vertex tawny yellow, a line between the fulvous ocelli, broken forwards in the middle, a transverse band back of this, and a crescent near each basal angle connected by a curved line, dark brown; pronotum yellowish, irrorate with fuscous except on the anterior margin; elytral nervures pale, testaceous, heavily margined with fuscous; face yellow, sutures, arcs of the front and a spot on the clypeus fuscous; below brownish fuscous, legs annulate with fuscous.

Genitalia: Female, ultimate ventral segment little longer than penultimate, posterior margin shallowly excavated either side of the middle; pygofers over twice longer than wide, equalling the ovipositer. Male, valve broad, obtusely rounding: plates broad at base, triangular, three times longer than valve, outer margin thickly set with coarse hairs.

Described from numerous specimens taken in the mountains west of Fort Collins, Colo., between 7,000 and 9,000 feet altitude, and one specimen from Leadvile, Col. (C. P. Gillette). The Fort Collins specimens were all taken, together with their larvæ, from bearberry (*Arctostàphylos uva-ursi*).

Athysanus alpinus, n. sp.

General form and color of *obsoletus*, with the longer vertex of *extrusus*. Pale clouded yellow, with two transverse fuscous bands on the vertex. Length, ♀ 5.5–6mm, ♂ 4.5mm; width, ♀ 2mm, ♂ 1.5mm.

Vertex nearly as long as the pronotum, twice as long on the middle as against eye, three-fifths as long as the basal width, obtusely angulate before, the margin blunt and rounding; front, no longer than its basal width, twice longer than clypeus; pronotum two and one-half times wider than long; elytra shorter than the abdomen in the female, sligthly exceeding it in the male.

Color: Dirty straw yellow, a fuscous, transverse band between the ocelli, angled forwards nearly to the apex of the vertex, a brownish fuscous band just behind and parallel with the first, forking at each end, the anterior forks running forward to the ocelli, the posterior ones back to the basal angles; pronotum with four longitudinal stripes commencing back of the anterior margin, the outer pair divergent, the inner pair uniting across the scutellum; elytral nervures light, apical cells fuscous margined in the male; face yellow, a spot above either antenna and about seven arcs on the upper part of the front, fuscous.

Genitalia: Female, ultimate ventral segment half longer than the penultimate, outer angles rounded, a stout median process tipped with two divergent teeth, either side of which is a narrow angular emargination. Male, valve as broad as the ultimate segment and about half as long, plates triangular, two-thirds the width of the valve and two and one half times as long, their margins straight or slightly concave.

Described from fifteen specimens taken from a damp mountain meadow on the Little Beaver, Larimer county, Colorado, at an elevation of 9,500 feet.

NOTES ON EASTERN N. A. CYCHRUS.

Geo. A Ehrmann, Pittsburg, Pa

Cychrus nitidicollis Chev.

I have taken this species but once in this locality, a single specimen; I have, however, taken it several times at Charleroi, Washington county, and received it from Fairmount, W Va. All were found during the months of August and September

C. nitidicollis, var. **brevoorti**, Lec

Of this extremely rare form I have found but one specimen, at Charleroi, November 12, 1896, and since then have not happened across it.

C. stenostomus Web.

I only found three specimens under dry leaves at base of beech-nut tree, on September 4, 1896, and none since

C. stenostomus, var. **lecontei**, Dej.

The most abundant of the *Cyhcri* found in this section.

I have taken this form in every month of the year, sometimes during January imbedded in ice, and holding these in my hand, the heat of which would soon resuscitate them.

C. stenostomus, var. **bicarinatus**, Lec.

I found one specimen only of this rather rare form on September 9, 1897.

C. canadensis Chd.

Is recorded as being found at Pittsburg. I find, however, after examining the collections in this section, that all specimens are from Prof. Jerome Schmitt, of St. Vincent's College, who has frequently taken it at Chestnut Ridge, Cambria county, Pa.

C. elevatus Fab.

This is also recorded as found in this section. The specimen upon which the record in Hamilton's list of Coleoptera of Western Pennsylvania, is based, giving the locality as Jeannette, Pa., was originally in my possession and is from Green Ridge Mo. Am of the opinion this species does not occur in southwestern Pennsylvania.

C. viduus Dej.

I have apparently been more fortunate than most collectors in the capture of this species, yet all were taken in a small, restricted locality at Baldwin's station.

Several specimens have often been found very close together, as many as four at one time under a stone about one foot in diameter. It has often been a great pleasure to me to hold this beautiful insect in my hand and admire its graceful form.

Though I have had as many as three specimens in my hands at one time, it does not always happen that success rewards a search for this species, having many times turned over so many stones, logs, sticks and bark that my back felt broken from the exertion; on glancing backward over the route followed in the vain search, it looked as if it had been struck by a cyclone

I have held a live *Cychrus viduus* in my hand whose head was imbedded in the mouth of a shell of the large land snail, who was so intent on his occupation that transferring my hold from him to the shell and letting him hang suspended did not interfere with him in the least; he seemed so absorbed in the process of feeding that continual maneuvering in this manner failed to distract his attention from his prey.

The species is found here from April until the end of September.

C guyoti Lec

This species is so rare that it is represented in but few collections

Prof. Jerome Schmitt, of St. Vincent, Pa., has a fine pair received some years ago from North Carolina.

As for as recorded, this species occurs only in the mountain regions of that State. (A note concerning the above record will be published in the September number.)

C. ridingsii Bland.

This very pretty little species, in appearance so much like a diminutive *C. andrewsii*, has only been found at Uniontown and Cresson, Pa., proving it to be a strictly mountain species, as is the case with *C. canadensis*.

C. andrewsii Harr.

The species is found here, though not so restricted as *C. viduus*, nor found as often, yet the habits are similar.

This has only been taken from June 28th to September 14th and does not seem to cover as long a perion as *C. viduus*.

In looking for *Cychrus*, I find wherever land snails are abundant, some one of the species will be found.

Cychrus should always be sought after in damp, shady and stonyplaces. During my collecting experience of twenty years, have never found any species but *C. lecontei* hibernating.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfullyreceive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer for each number three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., JUNE, 1899.

EDITORIAL.

"Prior to 1618 it was supposed that all small animals were spontaneously generated; for instance, eels were supposed to be generated from the slime of the Nile, and maggots were thought to be spontaneously generated in meat. To the examination of this very point the celebrated Francesco Redi, physician to the Grand Dukes Ferdinand the Second and Coomos the Third, of Tuscany, and a member of the Academy del Cimento, addressed himself in 1618. He had seen the maggots of putrefying flesh and reflected on their possible origin. But he was not content with mere reflection nor with the theoretic guesswork which his predecessors had founded on imperfect observations. Watching meat during its passage from freshness to decay, prior to the appearance of maggots, he invariably observed flies buzzing around the meat and frequently alighting upon it. The maggots, he thought, might be the half-developed progeny of these flies. The inductive guess precedes experiment, by which, however, it must be finally tested.

"Redi knew this and acted accordingly. Placing fresh meat in a jar and covering the mouth with paper, he found that, though the meat putrefied in the ordinary way, it never bred maggots, while the same meat placed in open jars soon swarmed with these organisms. For the paper cover he then substituted fine gauze, through which the odor of the meat could rise. Over it the flies buzzed and on it they laid their eggs, but the meshes being too small to permit the eggs to fall through no maggots were generated in the meat. They were, on the contrary, hatched on the gauze. By a series of such experiments Redi destroyed the belief in the spontaneous generation of maggots in meat, and with it doubtless many related beliefs."

Suppose after having been dead, say about 260 years, Redi should come back to life and pick up a copy of *The New York Medical Journal* of December 10, 1898, and read an article entitled, "The Cultivation of the *Plasmodium malariæ*," by L. H. Warner, M. D. A portion of this paper reads as follows: "Dr. Walter F. Scheele, of New York City, recently conducted a number of experiments and investigations in mosquito development which prove that ***there are three distinct types of mosquitoes,*** each possessing ***a distinct degree*** of poisoning power in its sting. His claims are ***that mosquitoes originate*** and develope in foul water, especially when vegetable or animal albuminous substances are present. In the first stage of its development ***the mosquito is a conglomerate mass of different bacteria and microbes,*** formed by decomposing matter, composed of vegetable and animal albumen. The latter being in a state of decomposition is a deadly poison.

* * * *

"Upon emerging from the water ***the mosquito is charged with a surplus of albuminous poison, which must be got rid of immediately or death occurs; hence it instinctively seeks to preserve its life by stinging and injecting the injurious albumen into the only objects that will receive it, man and beast."*** If Redi came to life and read this rot, he would undoubtedly be disgusted with the nineteenth century and immediately desire to return to the "shades." The most charitable thing we can say of the editor of *The New York Medical Journal* is that he never read the manuscript of the article, or he would not have permitted such stuff to appear in a respectable periodical.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

THE AMERICAN ENTOMOLOGICAL SOCIETY intends to prepare a Directory of American Entomologists, which shall contain the names, addresses, special orders studied, etc. Such a work can't fail to be extremely useful. Its success will largely depend on the interest entomologists take in it and the promptness with which they supply the necessary information. Please send to ENTOMOLOGICAL NEWS, the Academy of Natural Sciences, 1900 Race street, Philadelphia, the following information in regard to yourself and any friends interested in the study of insects:

Name,
Correct address,
Special study, orders, etc.,
Have you a collection?
Do you exchange specimens?

FELDMAN OUTING.—The Feldman Collecting Social at its last meeting decided to hold a field meeting at Anglesea, New Jersey, on the coming July 4th. The undersigned committee of arrangements was appointed, with plenary power, and herewith extend a cordial invitation to members of the different Entomological Societies to be their guests on the above date. The Keystone Rod and Gun Club will be the headquarters of the meeting. All collectors who desire to attend are cordially invited to be the guests of the Feldman Collecting Social on Tuesday, July 4th. The quarters, however, will be open from Saturday, July 1st, until afternoon of July 4th, thereby enabling anyone desiring to spend several days collecting at this place to do so, in which case the committee will be pleased to furnish, upon application, any desired information regarding several days' accommodations. It is important that those desiring to attend the meeting of July 4th should notify the committee as early as possible, in order that they may know how many to provide for, and thus assure comfort and sufficient room for all.

THEO. H. SCHMITZ, Chairman,
No. 3104 Baring street, West Philadelphia.
Charles Boerner, H. W. Wenzel, Philip Laurent.

CHRYSIS SCHLETTERERI, MOCSARY.—A few years ago, I caught at Socorro, New Mexico, a beautiful species of *Chrysis* resembling both in color and structure the European *C. ignita*, but smaller and more slender than that insect. I now find that it agrees with the desception of *C. schlettereri*, Mocs., from Tacubaya, Mexico; so that name is to be added to our faunal list. T. D. A. COCKERELL.

ON the best method for killing large insects.—Having received several inquiries as to the easiest and quickest plan for killing large specimens, it may be of some interest to give my *modus operandi*. Here in the tropics the need for such a plan is greater, of course, but

I believe many a fine specimen has been ruined by the collector's relying wholly upon the cyanide jar.

My first "snag" for the cyanide process was a quart of lively *Heterogomphus chervolati*—Burm, and Stratægus julianus—Burm. They reveled in the cyanide. There was no boiling water. I made a hypodermic syringe by drawing the tip of my medicine-dropper to a fine, slender point in an alcohol flame. By puncturing the thick wall of the metasternum with a strong setting-needle I could easily insert the "hypo" and inject three or four drops of gasoline directly into the body cavity. Death was instantaneous; no second dose required. I now use the same plan for all large insects. Even the largest sphingids like *Amphonix medor*—Cr. are killed in two seconds - without turning a scale.

Care should be taken to have the bulb of the "hypo" fit air-tight the tip should taper gradually and with a slight curve. It should be inserted from beneath into the middle of the thorax, and if well managed little or no gasoline should appear on the outside. The tip of the "hypo" may be protected by thrusting it into a good-sized cork. "Hypo" and small vial of gasoline may be carried in the same small pocket. O. W. BARRETT,

Tacubaya, D. F , Mexico.

ECDYSIS OF *Automeris leucane*—Hbn. The thin cocoon is made of coarse, gluey, red-brown silk; 5 mm. inside the front end is a transverse wall or screen with meshes (usually) of about 1 mm. This wall is fastened rather loosely to the cocoon and is not "dissolved," scarcely softened even, by the imago, but merely loosened at one side. The abdomen at once lengthens 5 mm. or 8 mm. after the pupa case is ruptured and so good "push power" is developed. The hinges of the screen door being broken the ecdyis is completed in three to five minutes, the front end of the cocoon offering but little resistance. Twenty to thirty minutes after the screen snaps back into place the wings are full-sized. O. W. BARRETT

A NEW RECORD IN AN ODD PLACE.—In January of 1899, while in practice in Los Angeles, a patient presented himself complaining of pain and discharge of watery fluid from one of his ears.

Examination revealed a tick that was easily removed The tick looked unfamiliar, and on forwarding it to the Dept. of Agriculture at Washington it was discovered to be *Argasmegini*. Duges, originally described from Mexico and not hitherto reported from the United States.

The patient had never been twenty miles away from Los Angeles, and had in the autumn spent a few weeks in the country, but had not been sleeping out of doors. A. DAVIDSON, M. D.,

Clifton, Arizona.

SPHEX ELEGANS.—This wasp for some reason or other is very seldom found among the many other wasps one may capture in a few days of collecting; yet they must be common in summer, for their nests are frequently to be found in the stems of the white sage so common throughout South California.

For nesting sites they prefer the larger stems, first gnawing through the thin partitions opposite the leaf insertions, which naturally divide an otherwise hollow stem. The parent wasp first packs the bottom of this tube with very fine, grass-like fibres; which, on investigation, prove to be fine strips of the loosely fibrous bark of Audibertia polystacha, from 1-4 inch to 1 1-2 inches in length. On this is laid the larval food supply which consists of, on an average, of seven or eight tree crickets. The egg is laid on the breast of one of the tree crickets, a wad of bark fibre is placed on the top which forms the base for the next cell, etc. A copious wad, sometimes three or four inches in depth, protects the topmost cell.

The cocoon when completed is one inch long and one quarter inch wide at its widest part at the cephalic end. It has two coverings, the outer a loose sac resembling tissue paper, of a grayish brown color, the inner somewhat resembling that of the common mud dauber, but stouter and denser.

The majority of the adult wasps hatch out in July and August and pass the winter concealed in crevices or other convenient shelters in trees and rocks; a few, probably not more than 15 or 20 per cent., remain in the larval stage till the following May. They make their escape by forcing their way through the fibrous divisions above, seldom cutting their way through the sides of the stem.

P. trypoxylonis, Towns; may, as usual, be found to have consumed the larval food. Of genuine parasites there are few, all of them attack the larva after it has spun its cocoon. They are *Epistenia cærulata*, *Photopsis unicolor*, *Photopsis ferrugineo.*

A. DAVIDSON, M. D.,
Clifton, Arizona.

NOTES ON CALIFORNIA WASPS.—THE NESTING HABITS OF ANCISTROCERUS BIRENIMACULATUS, SAUSS.—In the end of February or in the first week of March, before the increasing warmth of spring has yet stirred any of the other wasps, this one has broken its way through its cell and begun building for its coming brood. It usually constructs its cells in the hollow stems of plants or in the deserted tunnel of some other species. If the cavity is a narrow one, these cells are placed in a single series; if wide, they are grouped together laterally, in sufficient numbers to fill the cavity. The cells vary in size according to the cavity they occupy, their average external measurement being 7-19 inch long by 3-19 wide. They are circular on section, truncate at the ends, and are built of little pellets of clay pieced together in a manner similar to that of the common mud-dauber wasp of this section. The number of cells built by each wasp varies from 2 to 15.

Immediately on exit they begin to build fresh nests and many may be found complete in April. The young are fed on the small green larvæ found so abundantly on the leaves of the common Artemesia; eight of these is the average number found in each cell. The egg is deposited after the cell is filled. The larvæ of this species, in common with many others, can devour more food than the parent wasp generally allows them; one of them that I experimented with had no difficulty in disposing of four small spiders immediately after consuming the maternal allowance.

The parasites affecting these are few in number and are limited to one species, viz., *Chrysis cœrulans*, Fabr.

This wasp, I believe, possesses the distinction of having a smaller percentage of parasites than any other I have investigated. Of the hundreds of cells I have examined only five contained parasites.

This immunity is probably wholly due to the nests being completed months earlier than the majority of parasites usually appear.

A. Davidson, M. D.,
Clifton, Arizona.

Prof. F. W. Mally, of Hulen, Texas, has recently been elected, by the directors of the Agricultural and Mechanical College of Texas, State Entomologist and Professor of Entomology in the college.

Dr. A. Fenyes has started on a collecting trip to Mexico, Texas, New Mexico and Colorado, and will be gone five months.

Dr. William Barnes is collecting Lepidoptera in Southern Arizona.

Dr. Henry Skinner, Prof. A. J. Snyder and Mr. Philip Laurent are planning a collecting trip to the Rocky Mountains.

The following is of interest as an early reference to *Cicada septendecim*. The brood referred to seems to be that due in 1902.

E. Foster, New Orleans, La

" A respectable old gentleman, who has seen and observed the locust at the different periods of their appearance, as noted below, has favored the editor of the *Register* with the following memoranda:

" ' The locust appeared—

" ' In 1749, in the month of May.

" ' In 1766, they came out of the ground from the 14th to the 17th of May.

" ' In 1783, they came out fron the 16th to the 19th of May.

" ' In 1800, from the 19th to the 26th of May.

" ' In 1817, they did not appear until the beginning of June. It is supposed the cold and wet weather retarded their progress.

" ' They continue from four to six weeks, and are harmless, except to young and tender fruit trees or the twigs of older trees, wherein the female deposits her eggs, which in a few days vivify, and the twigs either break off or the young locust emerges and falls to the ground, and makes its way into the earth for another period of seventeen years ' "—*Niles' Weekly Register, July 12, 1817, XII, p. 310.*

Entomological Literature,

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in HEAVY-FACED TYPE refer to the journals, as numbered in the following list, in which the papers are published; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

3. The American Naturalist, Boston, May, '99.—**4**. The Canadian Entomologist, London, Ont., May, '99.—**5**. Psyche, Cambridge, Mass., May, '99.—**9**. The Entomologist, London, May, '99.—**10**. Nature, London, '99.—**11**. The Annals and Magazine of Natural History, London, April, '99.—**14**. Proceedings of the Zoological Society of London, '98, pt. iv, April 1, '99.—**15**. Biologia Centrali-Americana, London, pt. cxlvi, Feb '99.—**22**. Zoologischer Anzeiger, Leipsic, '99.—**35**. Annales, Société Entomologique de Belgique, Brussels, xliii, 3, March 30; 4, April 27, '99.—**38**. Wiener Entomologische Zeitung, xviii, 2-3, March 31, '99.—**40**. Societas Entomologica, Zürich-Hottingen, '99.—**46** Tijdschrift voor Entomologie, xli, 3-4, The Hague, March 28, '99.—**55**. Le Naturaliste, Paris, April 1, '99.—**59**. Sitzungsberichte der naturforschenden Freunde, Berlin.—**75**. Twenty-ninth Annual Report, Entomological Society of Ontario, Toronto, '99.—**84**. Insekten Börse, Leipsic, '99.—**86 a**. Annales, Société Entomologique de France, Paris, '97; 1, Dec., '97; 2-3, April, '98; 4, July, '98; all received May, '99.—**86 b**. Bulletin of the preceding, '97, received May, '99.—**107**. Revista do Museu Paulista, iii, 5, S. Paulo, Brazil, '98.—**108**. The Agricultural Journal. Published by the Department of Agriculture, Cape of Good Hope, Cape Town, '99.—**109**. Proceedings, Royal Society of Queensland, xiv, Brisbane, '99.—**110**. Bulletin, Société d'Histoire Naturelle de Colmar, nouvelle série, iv, '98.

The General Subject.—Bachmetjew, P. The critical point and the normal solidification point of insect juices, **40**, April 1.—Brainerd, D. The preparation of specimens for the exhibition of life-histories in the cabinet, figs., **75**.—Brindley, H. H. On certain characters of reproduced appendages, particularly in the Blattidæ, 1 pl., **14**.—Comstock, A. B. Hints on making collections of insects, Teacher's Leaflets, for use in the public schools, prepared by the College of Agriculture, Cornell University, Ithaca, N. Y., No. 7, June 1, '97.—Evans, J. D. Notes on insects of the year, division No. 2, Bay of Quinte district, **75**.—Harrington, W. H. Notes on insects of the year, division No. 1, Ottawa district, figs., **75**.—Hubbard, H. G. Insect fauna of the giant cactus of Arizona: letters from the southwest, **5**.—Kilman, A.

H. Notes on insects of the year, division No. 4, Niagara district, figs., 75.—Künckel d'Herculais, J. Moulting in insects considered as a means of defense against vegetable or animal parasites; special roles of tracheal and intestinal moulting, Anales Sociedad Cientifica Argentina, Buenos Aires, March, '99.—Lemoine, V. On the application of the Rœntgen rays to the study of Articulates, 86 b.—Lochhead, W. Entomology in schools, figs., 75.—Lyman, H. H. The President's annual address, 75; The freezing of insects, 75.—Marchal, P. The Cecidomyids of cereals and their parasites, figs., 8 pls., 86 a, 1.—Mayet, V. Note on the insects of the salt lands 86 b.—Moffat, J. A. Notes on the season of 1898, 75.—Norris, A. E Cabinet pest deterrent, 4.—de Peyerimhoff, P. Sexual variation in the Arthropods, 86 a, 2-3.—Rennie, R. W. Notes on insects of the year, division No. 5, London district, figs., 75.—Rousseau, E On a process permitting the study of the internal anatomy of insects without dissection (preliminary communication), 35, 4 —Schenkling, S. On myrmecophilous Arthropods, 84, April 13; Springing beans, 84, April 20.—Schwarz, E. A. Classified list of species observed by H. G. Hubbard on the giant cactus, 5, supplement.—Webster, F. M. The collector and his relation to pure and applied entomology, 75

Economic Entomology.—Anon.—Abstract of recent publications, Experiment Station Record, x, 8, U. S. Dep't of Agriculture, Washington, '99.—Anon. Dragonflies and chicken-raising, 84, April 27.—Anon. The gypsy moth and economic entomology, 3.—Austen, E. E. Mosquitoes and malaria, the manner in which mosquitoes intended for determination should be collected and preserved, 10, April 20.—Benn, J. H., and others. Locust extermination, 108, March 30.—Carew-Gibson, E. A., Matsimura, M. [The apple fruit miner, *Argyresthia conjugella*], 4.—Chittenden, F. H. Some insects injurious to garden and orchard crops, figs., Bulletin No. 19, new series, U. S Dep't Agriculture, Division of Entomology, Washington, '99.—Chobaut, A. On a *Xyleborus* parasite of an orchid in European greenhouses, 86 a, 2-3.—Daguin. Edible insects in antiquity and in our own day, 55.—Daniels, C. W. On transmission of proteosoma to birds by the mosquito: a report to the Malaria Committee of the Royal Society, Proceedings of the Royal Society, London, lxiv, 411, April 18, '99 —Dearness, J. The cotton boll worm in Canadian corn, 75.—Duggar, B. M. Notes on the use of the fungus *Sporotrichum globuliferum* for the destruction of the chinch-bug (Blissus leucopterus) in the United States. Centralblatt für Bakteriologie. Jena, March 31, '99.—Edington. Locust extermination by the means of fungus, 108, March 16.—Fletcher, J. The brown-tail moth; Injurious insects in 1893, figs., 75.—Forbush, E. H. The gypsy moth, 75.—Fuller, C. The common blue tick of Cape Colony and its relationship to the red water ticks of North America and Australia, figs., **108**, March 16.—Fyles, T. W. The farmers' garden and its insect foes, figs., **75**.—Hunter, S. J. Alfalfa, Grasshoppers. Bees: their relationship, figs., Contributions from Entomological Laboratory, University of Kansas, No. 65. Lawrence, Jan '99.—Hutt, H. L. A few of the most troublesome insects of the past season (1898), figs., **75**—Illidge, R. Life-history, etc., of timber moths, **109**.—Lounsbury, C. P. Coddling moth again, **108**, March 2.—[Lugger O?] Butterflies and moths injurious to our fruit-producing plants, 237 figs. Bulletin 61, University of Minnesota Agric. Exper. Station, Division of Entomology. St. Anthony Park, Minn., Dec., '98.—Marchal, P. See the General Subject; also numerous short notes in **86 b**.—Mayer, C. A new remedy against phylloxera, **108**, March 2.—Pound, C. J. Notes on the cattle-tick, **109**.—Roberts, L. Ticks and their destruction, **108**, March 16.—Shirley, J. Notes on bees and [as destroyers of] wax-scales, **109**.—Slingerland, M. V. Some new notions about some old insects, Reprint from Transactions, Massachusetts Horticultural Society, pt. 1, Boston, '99; Insect pests of 1898, Reprint from Proceedings, Forty-fourth Annual Meeting, Western New York Horticultural Society, Jan. 25, 26, '99.—Spalikowski, E. New researches on the accidents caused by the stings of bees, **55**.—Webster, F. M. Some economic features of international entomology, figs, **75**,—Weed, C. M. The forest tent caterpillar, figs., Bulletin 64, New Hampshire College Agricultural Experiment Station, Durham, N. H., April, '99; [Report of] Department of Entomology, figs, Tenth Annual Report of the same, Nov., '98.—Wells, H. H. and others. Locust fungus operations, **108**, March 2.

Arachnida.—Biro, L. Mimetic spiders, [in Magyar, brief summary in German], Rovartani Lapok, Budapest, April '99.—Cambridge, F. O. P. On new species of spiders from Trinidad, West Indies, 1 pl., **14**.—Cambridge, O. P. Arachnida-Araneidea, pp. 289-296*, **15**.—Gillette, C. P. Life-history of the sheep scab-mite, *Psoroptes communis*. **75**.—van Hasselt, A. W. M. The venom of spiders, **46**.—Moenkhaus, W. J. Contribution to knowledge of the Arachnida of San Paulo, 1 pl., **107**.—Pocock, R. I. A new stridulating Theraphosid spider from South America, **11**.—Trouessart, E Note on the organ of fixation and of suction in the larva of *Trombidion*, figs., **86 b**.

Myriopoda.—Hennings. Tömösvary's organ of *Glomeris*, figs., **59**, '99, No. 3.—Verhoeff, C. On the European cave fauna' especially Diplopoda and Chilopoda, **22**, April 17.

Thysanura.—Bouvier, E. L. The genus *Maindronia*, new type of the family Lepismidæ, **86 b**.—Calandruccio, S. On the biology of *Japyx solifugus* Hal. and *Campodea staphylinus* Westw., preliminary note, Bulletino d. Societa Entomologica Italiana, xxx, 1-2, Florence, Oct. 31, '98.

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THE ODONATA OF OHIO, BY DAVID S. KELLICOTT, PH. D. Ohio State University. Contributions from the Department of Zoology and Entomology. No. 1. [Reprinted from the Special Papers of the Ohio Academy of Sciences, No. 2.] Columbus, Ohio. Published by the State University, March, 1899. 8vo. pp. viii, 116.

Portrait of the author. Three plates, containing 39 outline figures of parts of species of *Enallagma*, *Lestes*, *Diplax* and *Gomphus*.

This posthumous work of Prof. Kellicott is introduced by a prefatory note from his successor, Prof. Herbert Osborn, stating that it has been prepared from the original manuscript left by its author. Of this the first 61 pages are unchanged. The remainder has been completed, in accordance with Professor Kellicott's plan of treatment, by his associate, Mr. J. S. Hine, who also contributes a biographical notice and a bibliography of his deceased colleague. Practically, therefore, the present essay is due to Messrs. Kellicott and Hine The figures have been drawn by Mr. W. E. Kellicott.

We have previously expressed, in this journal, our high appreciation of Prof. Kellicott's work on the dragonflies of Ohio. We are, therefore, much indebted to Mr. Hine for placing before us the present more extended results of that study.

The subject matter proper begins with a brief introduction, in which the student is referred to other authors for a knowledge of the structure and metamorphoses of these insects. The 100 species found in Ohio are then described, with frequent keys to assist in their identification. Notes are frequently added upon the habits of flight and of oviposition. We incline to think that the localities in which the rarer species have been found have not always been sufficiently indicated. In the hurried perusal with which we have been obliged to content ourselves, it seems to us that the key to the species of *Lestes* (p. 15) is not very helpful; that some names, such as *Fonscolombia* and *Diplax*, have been continued which must be given up; and that an error has been made in the key to the genera of Libellulinæ (p. 92) in using the character "sectors of the arculus pedicillate" for *Diplax*[=*Sympetrum*] and *Leucorhinia*, for the reason that a very considerable amount of variation exists in this regard.

Very little change has been made in arrangement and classification. A considerable number of mistakes have been made by ourselves and others in treating of various species of the North American Odonata, and some of these errors appear in the present work. As the corrections have not yet been published, however, neither Prof. Kellicott nor Mr. Hine are responsible for the errors of their predecessors; but students will do well to be on their guard in identifying forms allied to *Enallagma pollutum*, *Gomphus lividus*, *fraternus* and *externus*.

In closing, we call attention to a remark in the Introduction, which is very cheering to the odonatologist. Treating of the question of the decrease or increase in the number of species, we read: "It is the opinion of the writer that some few forms once resident are no longer within our limits, but that others have taken up their homes here at the same time: in fact, it appears probable that the number has increased, rather than diminished, up to the present time."

PHILIP P. CALVERT.

DOINGS OF SOCIETIES.

Regular meeting of the Newark Entomological Society was held Sunday, April 9th, at Town Hall, President Bischoff presiding and fourteen members present.

The family *Notadontidæ* was exhibited and was fairly well represented by most of the members, Mr. Kearfott's exhibit included an interesting series of blown larva and pupæ.

Mr. Weidt exhibited a series of *Fevalia Jocosa* among which were two specimens, the primaries of which were yellow instead of green, and read the following article :

"On Sunday, April 2d, I took a trip to Forrest Hill near Newark, N. J., with my friend, Mr. Broadwell. to collect one of the earliest noctuids of the season, *Fevalia jocosa* The weather was cold and before we reached our destination snow began to fall and a strong north wind was blowing which gave us small hopes of finding the insect, but after a search of two hours we had taken six specimens. The moth is taken on the bark of hemlock trees and all I have ever taken had just emerged, which made it an easy matter to capture them. It is necessary for the collector to carry a small box to put the specimens until they are fully developed before putting them in the poison bottle. I took a specimen March 8th, last year (an early spring) and took one as late as April 19th this year.

I have never seen the insect flying nor taken one at light. Prof. Smith remarked the tongue being very small, the moth is no feeder and does not fly much. He added that the insects mate early; usually in twenty-four hours and disappear soon after. Mr. Angleman mentioned that he had taken specimens with the primaries half yellow and half green. Mr. Kemp stated that a half day's collecting of Coleoptera by him, in the vicinity of Elizabeth, N. J., on March 30th, resulted in the capture of over 1,500 specimens, among which he recognized over 150 species Cf these species there were about 90 Carabids, 40 *Staphylinidæ*, 8 *Chrysomelide*, 17 weevils and the rest scattered throughout the order. They were mostly collected among dead leaves and debris, on the ground. under bushes." A. J. WEIDT, Sec.

At the April meeting of the Feldman Collecting Social, held at the residence of Mr. H. W. Wenzel, 1523 South Thirteenth street, eleven members and one visitor were present.

Mr. Wenzel stated that in the old edition of the Catalogue of New Jersey insects there were but nine species of *Scydmaenidæ* listed, whereas the number will be increased to seventeen in the forthcoming edition as far as his own collecting is concerned. He had taken the following species of that family in New Jersey from January 28th to April 15th: *Brachycepsis subpunctatus*, *Scydmænus perforatus*, *Scydmænus flavitarsus*, *S. fossiger*, *S. basalis*, *S analis*, *S. brevicornis*, *S. clavipes*, *S. Lecontei*, *S. salinator*, *S. fatuus*, *S. fulvus*, *Cephensium corporosum*.

Mr. Laurent reported the abundance of pupa of *Ceratomia catalpa* at Moores, Delaware county, Pa. The pupa and many dead caterpillars lay just under the sod at the base of trees. The irregular appearance in abundance of the species was discussed by Messrs. Laurent, Skinner and Wenzel.

Dr. Skinner referred to a recently received letter, the writer dwelling on the probable large number of species new to science which existed in the private collections of many persons who were averse to sending them to specialists for study for fear that the specialists would desire to retain the specimen in payment for the trouble in identifying. The speaker held that specialists have the right to retain desirable specimens in such cases, and spoke of the ingratitude existing as a rule with those who expect to have scientific workers devote their time and experience in naming their specimens without recompense.

Discussed by Messrs. H. Wenzel and Bland, who concurred with Dr. Skinner.

Mr. H. Wenzel recorded the capture of *Erchomus lævus* in abundance at Anglesea, N. J., during the winter.

William J. Fox, Secretary.

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OBITUARY.

We announce with sorrow and regret the death of Edward Winslow Cross on April 23d, who resided in Manchester, N. H., and was born in that city July 21, 1875. He was an ardent student of entomology and a contributor to the pages of this journal. The Geometridæ claimed his especial attention, and he had a fine collection in the family. He was the youngest son of Judge David Cross, and a student at Harvard College Law School, and was graduated from Amherst College, class '97.

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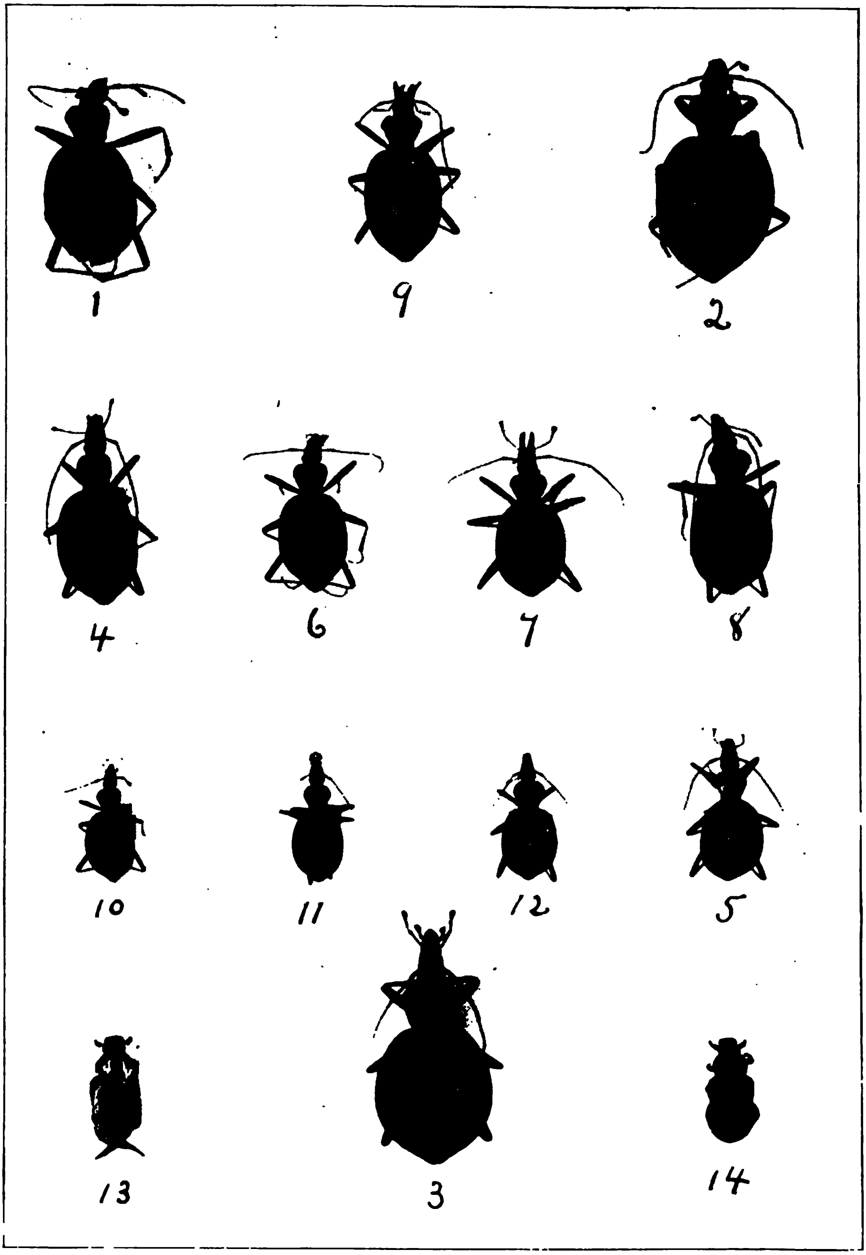
The February News was mailed February 3d.
The March News was mailed March 4th.
The April News was mailed March 27th.
The May News was mailed May 3d.



CYCHRUS, etc., (Liebeck)

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

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CYCHRUS GUYOTI vs. C. ANDREWSII VAR.

BY CHARLES LIEBECK, Philadelphia, Pa.

(See Plate VI.)

In the recent paper on *Cychrus* by G. E. Ehrmann, attention was called to a paragraph pertaining to certain specimens of *C. Guyoti* (No. 9 of plate), in the possession of Prof. Jerome Schmitt, of St. Vincent's College, Pa. Some confusion regarding the identity of this species exists in many collections, and the following notes are submitted with a view to preventing future errors.

C. Guyoti was described by Dr. Leconte, Proc. Phila. Acad. Nat. Sciences in 1866, p. 363, from a unique female collected in the Black Mountains of North Carolina. Later Dr. Horn, in his paper on *Cychrus* of N. A. Trans. Am. Ent. Soc., 1878, Vol. 7, p. 173-174, submitted the characters of male tarsi, separating these species as follows :

Anterior tarsus of male with a slight papillose space at tip of first joint. *Guyoti.*

Anterior tarsus of male densely, spongy pubescent beneath, first joint clothed over nearly the entire surface. *Andrewsii.*

When males are not present the position of the strial punctures of the elytron will readily separate the species.

Punctures of striæ regular and well centered. *Andrewsii.*

Punctures of striæ confused and encroaching on the intervals. *Guyoti.*

This character pertains to the basal three-fourths of the elytra, as the striæ and punctuation become confused at the apex in both species.

But three authentic specimens of *C. Guyoti* have been examined, and possibly forty of *C. Andrewsii*, all forms, and no deviation from the above rule occurs.

There is a tendency in many specimens of *C. Andrewsii* to a broadly angulated form of thorax as is shown by the accompanying plate, the series showing gradual development from No. 4 to 9 in regular order.

A series of *C. Ridingsii*, Nos. 10, 11 and 12, is also utilized to show the same character.

Without types or authentic specimens at hand, and only females present, the student can very easily go astray, as can be seen by a glance at No. 9, a supposed *Guyoti*, or No. 5, a small *Andrewsii*, which could very readily be confused with *Ridingsii.* The figures of plate show the comparative size of the various species, and it will be seen that *Guyoti* is much larger than *Andrewsii*, being quite as large as the larger form of *C. viduus.*

Specimens of the several species from Pennsylvania have the thorax longer and narrower than those of North Carolina and Tennessee.

I am indebted to Dr. Henry Skinner for the excellent photograph of the specimens and to Mr. Roland Hayward for careful comparisons with the Leconte specimens in the Cambridge Museum.

EXPLANATION OF PLATE.

1. C Guyoti Lec. male (Horn Coll.).
2. C Guyoti Lec female (Wenzel Coll.).
3. C. viduus Dej.
4. C. Andrewsii Harr. Pa.
5. C. Andrewsii Harr. Va.
6. C Andrewsii Harr. N C.
7. C. Andrewsii Harr. N. C.
8. C. Andrewsii Harr Sawyer's Springs, Tenn.
9. C. Andrewsii Harr. N. C.
10. C. Ridingsii Bland, type female, Va.
11. C. Ridingsii Bland, Pa.

12. C. Ridingsii Bland, Tenn.
13. Cremastochilus leucostictus Burm. male.
14. Cremastochilus leucostictus Burm. female.

THE LARGEST OAK-GALL IN THE WORLD AND ITS PARASITES.

By William H. Ashmead.

Some two or more years ago, February 20, 1897, the National Museum received from Dr. A. Duges, of Guanajaro, Mexico, the largest oak-gall it has ever been my pleasure to see, and which is undoubtedly the largest Cynipid gall yet discovered. Subsequently additional specimens of the same species, but much smaller and exceedingly variable in shape and size, were also received from Dr. Duges.

The first and largest specimen received, and which is unquestionably the largest oak-gall in the world, is of an irregular oblong, globular shape, and measures fully 4½ inches long by 3 inches in diameter. Externally it is opague, more or less roughened, and of a greyish color or somewhat similar in color to the bark of our common white oak; white internally it is brown and of a dense, hard, pithy substance. It is polythalamous; the larvæ cells being numerous and deeply imbedded, in the interior of the gall, as in those of similar structure.

The other specimens, afterwards received from Dr. Duges, are, as stated before, much smaller, more irregular in shape, and dwindle down in size to specimens not exceeding an inch in diameter. All of them, as we are reliably informed by Dr. Duges, were obtained from the roots of an unknown Mexican oak tree.

At the time of the receipt of the largest of these galls, I reported the gall was the product of an undescribed Cynipid, which would probably prove to belong to the genus Andricus.

The rearing of three of the gall-flies by Dr. Duges confirms my opinion in reference to the generic position of the gall-makers of this gigantic gall, but the gall itself is evidently similar to one described as *Cynips Championi* by Mr. Peter Cameron, in Biologia Centrali-Americana, Hymoptera, vol. 1, p. 70, the maker of which was unknown.

Dr. Duges also bred from this gall two distinct parasites: an inquiline, *Synergus* sp., and a Torymid, *Torymus* sp.; also a beautiful undescribed rhynchophorus beetle. The last the late Mr. Martin Linell had intended to describe under the name of ———

I believe with Dr. Calvert, that a name given to a gall alone, without a knowledge of the gall-maker, will hold in most cases, but such descriptions should be discouraged, since the identification of galls, without their makers, is always attended with uncertainty ever afterwards.

It is so in this case, but the name given by Mr. Cameron must be retained, and I give below, for the first time, the description of its maker, and its parasites.

Andrieus championi *Cameron*

Cynips championi *Cam.* Biol. Centr.—Am. Hym I, p. 70. (Gall).

Gall-fly.—♀ Length 4.5 mm. Black, the abdomen and anterior and middle femora rufous. Head and thorax rugoso-punctate, clothed with a sparse, glittering pubescence; abdomen smooth, polished, impunctate, the sides of segments 1-7 with sparse glittering hairs, antennæ 14 jointed, long, filiform, black, the third joint the longest, more than six times as long as thick, the following joints to the 13th, gradually shortening, the 13th joint being scarcely one-third the length of the third joint, the last joint almost as long as 12–13 united. Clypeus rounded at apex. Mandible strong, tridentate, piceous black, the inner tooth minute, the middle and outer tooth large, subequal. Mesothorax with the parapsidal furrows distinct and posteriorly becoming obliterated just before attaining the base of the scutellum; a median furrow only slightly or vaguely defined on the middle of the disk; anteriorly close to the margin are two short, glabrous lines; while the scapulæ have a long glabrous line; scutellum rounded, rugose, the foveæ at base with raised lines; metathorax short, with too median carinæ. Wings hyaline, the veins piceous-black, the vein at base of the open marginal being short and strongly angulated. Abdomen ovate, as long as the head and thorax united, polished impunctate except some sparse punctures on the sides of the seventh segment; sheaths of ovipositor black, not at all prominent.

Hab—Guanajuato, Mexico.

Type, No. 4304 U. S. N. M.

Described from 3 ♀ specimens, received from Dr. A. Duges.

Synergus Dugesi, n. sp.

♀—Length 3mm. Black, head, except the vertex, eyes, and occiput, the antennæ, the pronotum, except anteriorly, the trochanters, the knees, the tips of anterior and middle tibiæ and beneath, and their tarsi, brownish-yellow. Head rugoso-punctate, the face and cheeks with strong converging striæ. Mandibles ferruginous, black at tips. Antennæ 13-jointed the third joint very nearly as long as 4-5 united. Mesonotum rather coarsely, transversely rugalose, the parapsidal furrows very nearly obliterated by the coarseness of the sculpture. Mesopleura longitudinally striated. Metanotum short oblique, with two, rather widely separated, median carinæ and a distinct lateral carina, the angles prominent, pubescent, with prominent spiracles. Wings hyaline, the tegulæ piceous, the veins, except the subcostal and the median veins towards base which are pale yellowish piceous black. Abdomen ovate, about one-third longer than the head and thorax united, highly polished, black, the second segment, except the very short petiole, occupying the whole surface, the terminal segments being retracted.

♂—Length 2-6 mm. Agrees well with the ♀, except the sides of the pronotum, the mesopleura, but not the mesopectus and the legs, except a dusty shade on the hind tibiæ and tarsi, are wholly brownish yellow; the parapsidal furrows are distinct, the tegulæ brownish-yellow, while the antennæ are 15-jointed, the third joint being somewhat thickened, slightly curved and fully as long as joints 4-5 united, the following joints subequal.

Type, No. 4305 U. S. N. M.

Described from 1 ♂ and 2 ♀ specimens, bred by Dr. A. Duges from Andricus (Cynips) Championi *Cam.*

Torymus Mexicanus, n. sp.

♀.—Length 4 mm.; ovipositor 6.5 mm. Head and thorax metallic green, the hind margin of the mesopleura violaceous followed by a bright cupreous band; abdomen bronzed-black; flagellum black; scape, tegulæ and tarsi brownish-yellow; coxæ metallic green; anterior femora towards base and the hind femora except tips, metallic brown, the rest of the legs rufous wings hyaline, the veins, except the subcostal at base, dark brown. Head shagreened and punctate, the face clothed with a white pubescence; mandibles ferruginous, the teeth black. Thorax sparsely pubescent, transversely shagreened and punctured, the punctures more distinct and coarser along the hind margin of the pronotum, on the parapsides along the furrow of same, and on the scutellum. Mesopleura except the hind margin sculptured, the hind margin smooth, impunctate. Hind coxæ large, reticulately sculptured. Abdomen finely or microscopically reticulated, the dorsal flap bluish.

♂.—Length 3.2 mm. Agrees well with the ♀ in color and in the structure of the head and thorax, but the tegulæ and the femora are bluish-green, the tibiæ dark brown, the tarsi, except the terminal joint, whitish, while the abdomen is bluish-green scarcely as long as the thorax, with the dorsal flap bright green.

Type, No. 4306 U. S. N. M.

Described from 1 ♀ bred from the small gall.

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RECOLLECTIONS OF OLD COLLECTING GROUNDS.

By H. F. Wickham, Iowa City, Iowa.

IX. The Alpine Districts about Leadville.

Leaving Buena Vista, the railroad follows the Arkansas Valley very closely in the long climb to Leadville. As the mountain summits draw nearer and nearer the waters of the turbulent stream become ever less muddy and by the time the great mining camp is reached the dwindled Arkansas is transformed into a clear brook, flowing over a pebbly bed or gliding more slowly on a torturous course through broad marshy meadows. The altitude has now exceeded ten thousand feet and the fauna and flora are essentially modified in consequence.

We arrived at the station late in the afternoon of July 7th, during a heavy rain. Every afternoon of our eight day sojourn was marred by a like precipitation of moisture and this detracted materially from the pleasure of the trip as well as interfering with collecting. These showers are very cold and quickly result in benumbed hands which are slow to grasp the ground-inhabiting insects, and the saturated dripping foliage precludes successful use of the sweep-net or umbrella. The little butterflies (apparently some species of *Lycæna*) fold their wings and hang quite still upon the shrubs while a cold storm cloud is passing over, only to awake to active flight almost the instant that the sun comes out again.

The dirty, smoky city covers a great deal of ground and it is something of a walk from the "up town" hotels into the wooded hills which rise on every hand. The large timber, if there ever was much of it, is now mostly gone and the remaining trees are chiefly so dwarfed or undersized as to be of no use for commercial purposes. To this they owe their existence and as they still support some insects let us hope that they may long remain undisturbed. Many of the large ravines and gulches have been ruined entomologically by extensive mining operations but a few spots were found which yielded tolerably well. The stony porous soil of most of the hillsides holds but very little water and supports a fauna which is in strong contrast to that of the marshy valley region.

We saw no living *Cicindelidæ* during our stay, but some dead *C. cinctipennis* served to show that the species extends up the valley from Buena Vista, where it was seen rather abundantly. On the higher slopes of Moose Mountain, which lies near enough to Leadville to make the summit, though far above timber line, tolerably easy of access on foot, we took *Carabus tædatus*, of the form which I have always considered as representing *oregonensis* and have distributed as such. It was scarcely common, but we managed to get several under stones and logs in the valley of a little stream which heads on the mountain. The banks of this stream were lined with stones under which we found a few *Nebria obliqua* and *N trifaria*, *Patrobus aterrimus* and some Staphylinidæ, while *Bembidium incertum*, *B. grapii* and *Trechus chalybeus* were secured with them but in more abundance. All of these bank loving Carabidæ were found in the wettest, coldest spots, often in the spray from a small cataract and their capture was attended with a good deal of bodily discomfort, owing to the rains and the very low temperature of the water in these mountain streams which are mainly fed from snow fields lying higher up.

Following the ravine we finally emerged from the timber and found ourselves on the bald, rocky head of the mountain, where no trees grow, for after leaving the fringe of gnarled, wind-twisted stunted evergreens that mark the timber line, the rest of the vegetation consists only of low herbs which become of less and less height as we ascend until at last we find the flowers blooming almost on the level of the ground from which they emerge—a scanty circlet of leaves, crowned by a stalkless blossom—and the spaces between the boulders are clothed with a flower-studded carpet of vegetation which has the general effect of moss, though really very different. Between timber line and the summit we secured *Pterostichus surgens*, *Amara hyperborea*, *Cymindis cribricollis*, *Cytilus trivittatus*, *Aphodius aleutus*, *A. phæopterus*, *A. vittatus* and fragments of the before mentioned *Carabus* and of *Entomoscelis adonidis*.

The lower hills near town were worked for Carabidæ by careful search under stones. As a result we got *Notiophilus sibiricus*, *Pterostichus protractus*, *Pt. luczotii*, innumerable *Amaræ*, *Calathus ingratus*, *Cymindis unicolor*, *C. cribricollis*, *Harpalus innocuus* and *H. montanus*. Incidentally we secured some beetles of other families in the same situations,—*Cytilus trivittatus*, *Cryptohypnus abbreviatus*, *C. nocturnus*, *C. tumescens*, *Graphops varians*, *Adimonia externa* and a species of *Macrops*. Foliage of the dwarf evergreens on these hills was beaten over an umbrella with results as follows :—*Scymnus utilis*, one specimen, *Athous simplex*, rather scarce, *Podabrus lateralis* more abundant, *Dasytes hudsonius*, a few, *Callidium hirtellum*, a couple, and *Pachybrachys subvittatus*, several. On poplars we found a *Dicerca* (*tenebrosa ?*) and numerous *Zeugophora abnormis*, the latter eating irregular holes in the leaves. Some dead tops of coniferæ yielded several *Magdalis*, *Plagithmysus muricatulus* in plenty, and a specimen of *Salpingus virescens*. Flower working and miscellaneous sweeping showed up (besides some commoner things) *Coscinoptera vittigera*, *Trichodes ornatus*, *Epicanta pruinosa* and *Entomoscelis adonidis*. *Rhynchites bicolor* was not uncommon on wild roses. A few pieces of wood and the rubbish accumulated by a former rush of water through a deep ravine, furnished shelter for *Peritaxia rugicollis* and *Stephanocleonus cristatus*. The insects of the marshes are mostly Staphylinidæ, not yet worked out ; however I can name a few beetles from these spots, as follows :—*Elaphrus clairvillei*, rare, *Tachinus angustatus*, *Mycetoporus* sp., and an *Erycus* which seems to be *morio*.

Here, as at Buena Vista, we found it well worth while to search piles of logs and of sawed lumber in the railroad yards and about mills. We got in this way a very good lot of species as the accompanying list will show: *Melanophila longipes*, *M. drummondi*, *Chrysobothris caurina*, *Buprestis langii*, *B. adjecta*, *Clerus nigriventris*, *C. sphegeus*, *Thanasimus undulatus*, *Asemum mœstam*, *Criocephalus agrestis*, *C. productus*, *Phymatodes dimidiatus*, *Pachyta liturata* (light and dark forms), *Acmœops proteus*. *A. pratensis*, *Leptura 6-maculata*, *L. sanguinea*, *Monohammus scutellatus* and *Pagonocherus mixtus*. Altogether we considered our visit to this vicinity as being a successful one, although the neighborhood is probably by no means as rich as in former days before the development of its mineral resources so ruined the beauty which must have marked it previous to the advent of the railroad and the smelter.

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CALOPTERYX ANGUSTIPENNIS SELYS IN WESTERN PENNSYLVANIA.*

By E. B. Williamson, Pittsburgh, Pa.

On June 18th of this year Mr. D. A. Atkinson, J. L. Graf, H. D. Merrick and myself visited Ohio Pyle Falls, where in the course of a few hours we succeeded in taking about 40 specimens of the species named above. Males predominated. Ohio Pyle is situated on the Youghiogheny River. This river rises in Garrett and Preston counties, West Virginia; flows north into Pennsylvania, thence flowing north by northeast and emptying into the Monongahela at McKeesport, about 15 miles from the Ohio River. The Youghiogheny in its entire course is about 100 miles long. Ohio Pyle is in Fayette county, in the Laurel Ridge of the Allegheny mountains, at altitude of about 2,000 feet. It is about 12 miles north of the State line, in latitude 39° and 50' north and longitude 79° and 30' west. At Ohio Pyle the Youghiogheny has an average width of about 50 yards. Hills, several hundred feet in height, covered with deciduous trees, rise abruptly from the banks of the river. The bed of the stream is filled with large sandstone and conglomerate boulders, past which the current rushes with great velocity.

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* This brief paper is remarkable in that it gives an account of what is probably the most remarkable case of re-discovery of a rare species ever made among the North American Odonata. No other male of *angustipennis* has been known to exist than that in the British Museum, sent by Abbot from Georgia a century ago. Three females have been previously known. See Hagen, Psyche, v, p. 244. —P. P. Calvert.

The *Calopteryx* in its flight and habits much resembles *Hetaerina americana*, flitting over the rapids, resting on the boulders and on the few bushes and grasses margining the stream. They are swifter in flight and more difficult to take than *Calopteryx maculata.* Only adults were seen. One pair was taken in copulation.

Compared with Hagen's description, published in *Psyche* in 1889, the following may be noted :

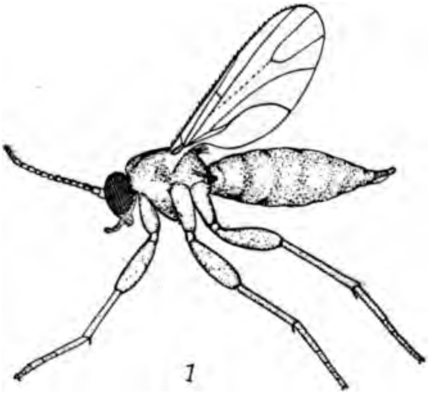
Hind wing, ♂, 36 ; ♀, 38. Width at nodus of hind wing, ♂ and ♀, 8. Ante-cubitals, front wings, ♂ and ♀, about 28 ; ante-cubitals of hind wings, ♂, about 22 ; ♀, about 25. Abdomen, ♂, 46 ; ♀, 43.

♂.—Second joint of antennæ, labrum and a small inferior median spot on rhinarium greenish white ; labrum with a round black spot just below the white spot on rhinarium ; labium black, outer lobe narrowly margined with greenish white ; upper part of head, especially about the ocelli, with brassy reflections ; eyes brown, thorax and abdomen bright green ; sutures of thorax black ; pectus pruinose with a transverse green band before the base of 1. Wings with the reticulation largely green, most noticeable when seen from the front ; subcostal apparently black ; median vein and principal sector closely joined for the distance of four or five antecubitals ; principal sector apparently arising from the subnodal. Abdomen darker anteriorly with bluish reflections, tending to brassy posteriorly, greenish black underneath ; sternum of 1 chalky white ; base of sterna of 3 to 8, with two bluish spots ; appendages dark greenish brown, as compared with *C. virgo* and *C. maculata* relatively longer, possibly with more teeth on the exterior dorsal edge of the superiors.

Since the above was written I have had the privilege of examining a male and female of this species collected by Mr. R. C. Osburn and Mr. J. B. Parker, on June 10th, in central Ohio, eight days before the species was taken at Ohio Pyle. The specimens were taken along Pine Creek, a tributary of Clear Fork, which in turn empties into the Mohican. They offer no differences from the western Pennsylvania specimens.

SCIARA INCONSTANS—REARED FROM CARNATIONS.

By James S. Hine.



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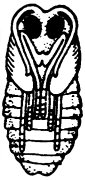

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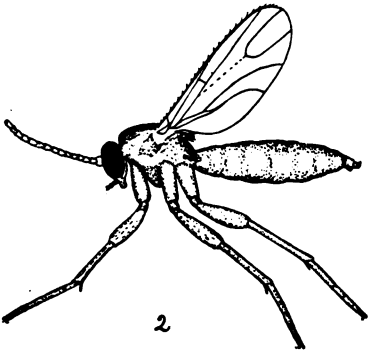

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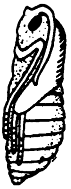

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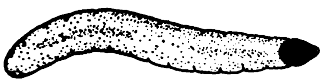

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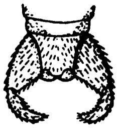

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In his second report Fitch described as *Molobrus inconstans* an insect which he found common in December on the windows of his room. He states that in all probability they emerged from earth in some flower-pots.

In January of the present year the complaint came in that carnations in the greenhouse were dying from some unknown cause. I investigated the matter and found no cause except numbers of minute white larvæ which were boring inside of all the stems that showed serious injury.

From these larvæ I reared several adults which were easily traced to the genus *Sciara*, but not being sure of the species I sent specimens to the Department of Agriculture at Washington where they were labeled *inconstans*. From what I knew of the habits of the larvæ of the Mycetophylidæ I supposed at first that the plants were killed in some other way and then were attacked by these insects, but by farther observation I was convinced that they fed upon the growing plants.

In the accompanying drawing, figure 1 represents the adult female, figure 2 the adult male, figure 3 the ventral view of pupa, figure 4 side view of pupa, figure 5 the larva and figure 6 the last abdominal segment of the male.

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LIFE HISTORY OF NOTODONTA GEORGICA—H. S.

BY HARRISON G. DYAR.

This larva is here described for the first time. Dr. Packard's description (Mon. Notodont., p. 154) of *georgica* larva was taken from some specimens in the National Museum which appear to have never been bred. What reason led to their identification as *georgica* is unknown to me, but they are in reality evidently larvæ of *Heterocampa obliqua*.

It will be remembered that Abbott and Smith figure *N. georgica* and *N. angulosa* as sexes of one species. My breeding explains this matter, since the larvæ of these species have the same food plant and habits and moreover resemble each other almost to identity. The main difference is the colored tubercle on the eighth abdominal segment of *georgica*. Apparently Abbot, overlooking this slight difference, figured the two species as sexes of one, since he probably bred them from what he considered the same larva.

Egg. I have not found these in nature. Eggs from the abdomen of the female moth are apparently hemispherical, white, coarsely granular rather than reticular and about 1 mm. in diameter.

Stage I. Head rounded, brown, a black shade over the vertex and behind; width .55 mm. Body slender, smooth and shining, sordid smoky greenish; a diffuse dark dorsal shade; a reddish band subventrally, joined to large blackish spots on joints 5, 6, 11, 12 subventrally with smaller spots on joints 3 and 4. Feet all black. Joint 12 a little enlarged; setæ short, pale; tubercles minute, black, normal, primary; cervical shield small, quadrate, dusky.

Stage II. Head rounded, bilobed, sordid green, a black line at the junction with neck and a blackish shade from the jaw to base of antenna; width 1 mm. Body opaque greenish white, dorsal vessel dark; a narrow white lateral line and yellow substigmatal one; subventral region olive brown the whole length. Thoracic feet, tubercles and leg plates black; anal plate dusky; cervical shield not distinct; joint 12 a little enlarged, its tubercles i large, contiguous, not elevated.

Stage III. Head green, a faint yellow line on each side behind the ocelli; width 1.4 to 1.8 mm. Body much as before, the tubercles and leg plates green; tubercles i of joint 12 large, at first concolorous, later yellowish.

Stage IV. Head higher than joint 2, flattened before, clypeus small, median suture a deep groove; deep green, finely mottled with white, a yellow line from antenna over lower ocellus to back of head; width 2.3 to 3 mm. Body slender, joint 13 tapering, its feet weak. Skin smooth except tubercles i of joint 12 which are high contiguous yellow tubercles with a seta at the apex of each. Green, the back heavily shaded with white, a broad dorsal band, streaked on the annulets (which are 6), divided by a greenish central line; a narrow subdorsal and lateral line, faintly white. The white shading extends between all these to a yellow stigmatal line with a black dash below it on joints 3 to 6, 11 and 12. A few white dots subventrally; feet green, the thoracic ones with three black dots. In another example the stigmatal line was narrowly bordered above with black, below with red.

Stage V. Head high, wide, rounded, green, thickly white mottled; jaws and a line to back of head opposite spiracle of joint 2 yellow, continuing the yellow stigmatal line of the body and like it narrowly red-edged below. Width 3.9 to 5 mm. Body slender, setæ minute, joint 12 a little enlarged dorsally, with high, contiguous, yellow, orange-tipped tubercles i. Marks as before, except that instead of the later lateral white line is a row of dots. Dorsum all white shaded, subventral region white dotted; stigmatal line narrowly black edged above with black dashes present on the legless segments, but not conspicuously.

The larvæ lives on a perch as *N. angulosa* and *N. ferruyinea* in the earlier stages.

Cocoon. A few threads between leaves.

Pupa. Cylindrical, tapering a little behind, dark mahogany brown; the edges of the segments next to the three moveable incisures sharply cut and nearly black. Cases shagreened, segments punctured sparsely on the anterior two-thirds. Cremaster two low, divergent cones, each with a short, thick, capitate spine at the tip with one or more small hooks on the lower aspect. Length 29mm., width 7mm.

Food plants. Oaks (*Quercus velutina, Q. minor*). The larvæ will feed on the rough leaved oaks, contrary to the habit of *N. angulosa.* The species is double brooded.

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TELEA POLYPEMUS is not a rare moth in the East, but the finding of a large number of their cocoons on apple, prune and willow in the vicinity of Los Angeles certainly is of interest, as I can find no record of their having been taken here before.

Mr. O. W. Howard sent me 50 cocoons taken as above noted, and he succeeded in raising about 75 by enclosing the moth with netting on our common pepper tree, thus establishing a new food plan for *polyphemus.* Early in January three dead cocoons were found well up in the Cahuenga Mountains, northwest of the city, and a number in the brush about the mouth of the San Gabriel Canon, 28 miles away, so the moth is evidently pretty well established.

All the Eastern cocoons that I have seen are wrapped in leaves with no attempt to fasten the stems to the twigs, and readily detach and fall to the ground, but these were closely woven the full length of the stem, and including the twigs adjoining thus being permanently attached to the tree. The moths began to emerge May 30, and continued to come at the rate of three or four a week until the past few warm days, when five appeared on the board this morning.

FRANK S. DAGGETT,
Pasadena, Cal.

NOTE.—Prof. A. J. Snyder took an imago of polyphemus at Salt Lake City, July 4th, 1899.—ED.

ENTOMOLOGICAL NEWS.

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To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer for each number three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., SEPTEMBER, 1899.

EDITORIAL.

During the past summer the newspapers of the Atlantic coast have been exploiting numerous instances of individuals being attacked or "kissed" by an insect which, in consequence of its asserted habit of swelling the lips of its human victims by its bite or sting, received the fatuous name of "kissing bug." Originating in the neighborhood of Washington, D. C., the report spread from newspaper to newspaper and with the lay people became a veritable midsummer madness. The United States Department of Agriculture identified the insect as *Melanolestes picipes*, a hemipter of previously good character, which fact went a great way in making entomologists in general sceptical as to the whole story, and we are glad to record that the much maligned *Melanolestes* has proven an alibi, as far as the evidence presented at the Academy of Natural Sciences of Philadelphia goes. Out of the many specimens brought to the Academy as the "kissing bug" (many of which had been pronounced the true thing by medical men) *not one* was *Melanolestes picipes*. To be sure the latter has a Latin name which might cast suspicion on any bug, and many of his relatives have a bad reputation, but by sticking to his old time habits of dwelling in secluded spots it has come out of the fray with a spotless reputation. The next time the newspapers wish to make a martyr let them steer shy of *Melanolestes picipes*, who has proven himself too much for their sensationalism.

The following species have been brought to the Academy of Natural Sciences of Philadelphia as the "kissing bug":

Diptera. *Tabanus sp.; Erax bastardi.*

Hymenoptera. *Camponotus pennsylvanicus* (queen); *Thalassa lunator; Tremex columba sericeus.*

Lepidoptera. *Scepsis fulvicollis.*

Neuroptera. *Perla flavescens; Corydalus cornutus.*

Coleoptera. *Orthosoma brunnea; Phytonomus punctatus; Monohammus titillator; Alaus oculatus; Harpalus caliginosus; H. pennsylvanicus; H. sp.; Tenebrio molitor; Creophilus villosus; Elaphidion sp. Balaninus quercus.*

Hemiptera. *Benacus griseus; Prionidus cristatus; Pentatoma sp.*

Many of the foregoing were brought in several times by different persons. W. J. F.

* * *

INCREASE OR DECREASE OF DRAGON-FLIES?—[Our quotation in the June NEWS, page 188, from Prof. Kellicott and Mr. Hines' "Odonata, of Ohio," has produced the following:]

"Do you think Prof. Kellicott's remarks about the increase in the number of species for the State of Ohio altogether correct? Such observations are hard to make Butterflies and other insects, as all collectors have observed, 'will have their years' A friend in Beaver county during 25 years observation found *Junonia cœnia* only one season when it was very common. Dr Holland, during 20 years, never saw *Melitæa phaeton* in this country, but a few days ago I took about 15 specimens. Last season on July 4 visited an old gravel pit near Bluffton, and there took 21 spp. of Odonata. On July 5 I visited the same pond at the same time of day; the weather was as nearly like the preceding day as two consecutive mid-summer days can be, and yet I found only about a dozen spp *Tramea lacerata* and *onusta* were numerous on the fourth, but were not seen on the fifth. I have, as a boy, seen the Wabash flowing like a silver ribbon between its blue grass-clothed banks, its waters teeming with fish and its ripples alive with Unionidae. Last summer I walked along mud flats by as foul smelling pools as could be imagined—for miles I am sure there isn't a live Unio. I saw black bass come to the surface, gasp and float, belly up, down stream. Even old slimy *Necturus* crawled out on the land to die, and their bodies lay along the banks of the river by dozens. Certainly it is an *a priori* argument that the Odonata are perishing when surrounded by such conditions E. B. WILLIAMSON.

DEPARTMENT OF ECONOMIC ENTOMOLOGY

Edited by Prof. JOHN B. SMITH, Sc. D., New Brunswick, N. J.

Papers for this department are solicited. They should be sent to the editor, Prof. John B. Smith, Sc. D., New Brunswick, N. J.

SEVEN NEW LOCALITIES FOR THE MEDITERRANEAN FLOUR MOTH, *Ephestia kuehniella*.—In response to a brief article of mine in *The American Miller* for May, 1899, I have received matted flour containing larvæ and pupæ of the Mediterranean flour moth, *Ephestia kuehniella*, from seven different sources, none of which having been previously reported, so far as I am aware. One lot is from Stark county, Ohio, the first reported from that State, and represents a very serious outbreak. The mill is being torn down Another package is from Los Angeles county, California. Three lots are from New York State representing Erie, Allegeny and Oswego counties. Two are from Canada, one of which comes from York district along Lake Ontario, while the other is from Leeds district along the St. Lawrence River. Each one of my correspondents reports the same disastrous results formerly reported by myself and others, following the establishment of this insect in a mill. I am also impressed with the fact that this pest is gradually spreading along the water courses of the Great Lakes, and inland along the lines of the railroads. It will certainly be to the advantage of all millers to be on their guard, and take immediate steps for the suppression of the pest should it appear on their premises. I am now making some experimental tests with hydrocyanic acid gas for the destruction of this and other insects in mills and closed buildings. Results thus far are very satisfactory, aud I believe the gas will come into extensive use for such purposes very soon.

W. G. JOHNSON,
College Park, Md.

THE NEW PEACH MITE.—With regard to the several references to "The New Peach Mite," which have appeared in ENTOMOLOGICAL NEWS since last December, it may be interesting to some of your readers to learn that in all probability the same or a very similar pest occurs in Western Australia.

During my stay in that colony (1896-7) I had several opportunities of observing a peculiar silvering of the upper surfaces of the leaves of some deciduous fruit trees This was due to the attack of a very smale *Phytoptus*. The injury appeared to me more pronounced during autumn, coming into evidence after most of the peach crop had been marketed. It did not seem to be of a very serious nature and was taken into little account by orchardists; and though no doubt a great deal of the functions of the affected leaves was lost, still there was no particular evidence in the growth of the trees which I have in mind to show that such was the case, and unless my memory deceives me the leaves did not fall before their time. It often happened, particularly with nectarines, that every leaf upon the tree would be affected.

Judging from Johnson's note alone, I should never have connected his pest with the Western Australian mite, as similarly affected nursery stock never came under my notice; but that the effect and nature of the mites' attack upon young plants in the nursery and vigorous growing trees might differ considerably I have little doubt. It is from Rolf's remark, however, to the effect that the mite causes "what might be termed a silvering of the leaves" that the possibility of the Western Australian pest being the same, occurred to me. This mite was also well known to my then colleagues R. Helms and A. M. Lea, and the latter has a short note upon it in the *Journal of the W. A. Bureau of Agriculture*, (p. 1194, April 17, 1897,) in which he describes the affected leaves as having a "glassy or silvery appearance on their upper surfaces," and correctly refers to this as due to the destruction of the surface cells by the mite, and their subsequent drying out and bleaching. I have only seen the peach, nectarine, almond and apricot so affected, but Lea adds the plum, quince and apple.

As far as I am aware this peach mite only occurs in the Swan River district, Western Australia, as I have not seen it in New South Wales nor the neighborhood of Melbourne or Adelaide, nor has it been reported so far by others from the remaining colonies of Australasia. CLAUDE FULLER, F. E. S.

Department of Agriculture,
Capetown, April 24, 1899.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

THE Entomological Society of Albany has recently been organized with an initial membership of about twenty under the following officers: Dr. E. P. Felt, President: Prof. Charles S. Gager, Vice President; Mr. Charles S. Banks, Recording Secretary; Miss Margaret F. Boynton, Corresponding Secretary; Prof. H. M. Pollock, Treas. The headquarters of the Society will be, for the present, at the office of Dr. E. P. Felt, the State Entomologist, where the regular meeting will be held the second Friday of each month. The objects of the organization are the promotion of interest in entomological science and the furtherance of fellowship among those interested, for their mutual benefit and enjoyment.

HARVARD UNIVERSITY has this year conferred the degree of Doctor of Science upon Justus W. Folsom, of Cambridge, Mass., for a thesis entitled, "Studies Upon the Mouthparts of Apterygota."

You will no doubt have heard of the purchase by the Brooklyn Institute of Arts and Sciences of the Neuomegen collection of lepidoptra, and the donation of my own collection. I have parted with everything relating to entomology, books, and all. I still retain my interest in the study, and have been appointed to the honorary position of curator of entomology to the Institute.

The Brooklyn Institute has now the best and largest collection of North American Lepidoptera in the *world*.

* Referred to Prof. A. J. Snyder to add to his list of largest American collection

EDW. L. GRAEF.

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Entomological Literature,

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in **HEAVY-FACED TYPE** refer to the journals, as numbered in the following list, in which the papers are published; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

1. Proceedings of the Academy of Natural Sciences of Philadelphia, 1899.—**2.** Transactions of the American Entomological Society, Philadelphia, '99.—**4.** The Canadian Entomologist, London, Ont., '99.—**5.** Psyche, Cambridge, Mass., '99.—**6.** Journal of the New York Entomological Society, June, '99.—**8.** The Entomologist's Monthly Magazine, London, '99.—**9.** The Entomologist, London, '99.—**10.** Nature, London, '99.—**11.** The Annals and Magazine of Natural History, London, '99.—**12.** Comptes Rendus, l'Academie des Sciences, Paris, '99.—**21.** The Entomologist's Record, London, '99.—**22.** Zoologischer Anzeiger, Leipsic, '99.—**24.** Berliner Entomologische Zeitschrift, xliii, 3, 4, May, '99.—**25.** Bolletino dei Musei di Zoologia ed Anatomia Comparata d. R, Universita di Torino, '99.—**30** Memoires de la Société Zoologique de France, xi, '98.—**30 b.** Bulletin of the same, xxiii, '98.—**32** Bulletin du Muséum d'Histoire Naturelle, Paris.—**35.** Annales, Société Entomologique de Belgique, xliii, Brussels, '99.—**36.** Transactions, Entomological Society of London, '99, pt. ii, June 22.—**37.** Le Naturaliste Canadien, Chicoutimi, Quebec, '99.—**40.** Societas Entomologica, Zurich-Hottingen, '99.—**41.** Entomologische Nachrichten, Berlin, xxv, '99.—**44** Verhandlungen, Zoologisch-botanischen Gesellschaft in Wien, xlix, '99.—**49.** Termeszetrajzi Füzetek, xxii, 2, Budapest, May 6, '99.—**52.** Transactions, South African Philosophical Society, x, 3, Cape

Town, '99.—**55.** Le Naturaliste, Paris, '99.—**56.** Mittheilungen schweizerischen entomologischen Gesellschaft, x, 5, Schaffhausen, April, '99.—**58.** Revista Chilena de Historia Natural, iii, 3, 4, Valparaiso, March, April, '99.—**68.** Science, New York, '99.—**79.** La Nature, Paris, '99—**81.** Biologisches Centralblatt, Erlangen, May 15, '99.—**82.**—Centralblatt für Bakteriologie, Jena, '99.—**84** Insekten Börse, Leipsic, '99.—**87.** Revue Scientifique, Paris, '99.—**102.** Proceedings, Entomological Society of Washington, iv, 3, May 24, '99.—**111.** Seventh Annual Report, Ohio State Academy of Science, Columbus, '99.—**112.** Bulletins, New York State Museum, vi, Albany, '99.—**113,** Archives Italiennes de Biologie, xxxi, Turin, '99.—**114.** Rivista di Patologia Vegetale, Florence, '98.—**115.** Oversigt Kongelige Danske Videnskabernes Selskabs Forhandlinger, '98, 6, Copenhagen.

The General Subject.—Anon. Insects from the higher latitudes of North America **21,** June 1.—Ashmead, W. H., Linell, M. L., Schwarz, E. A., Dyar, H. G., Coquillett. D. W., Banks, N., Cook, O, F. Reports upon the Insects, Spiders, Mites and Myriapods collected by Dr. L. Stejneger and Mr. G. E. H Barrett-Hamilton on the Commander Islands, in: The Fur Seals and Fur-seal Islands of the Northern Pacific Ocean by David Starr Jordan. Part 4. Washington: Government Printing Office, 1898. Rec'd June 13, '99.—Aurivillius, C. On the Linnean types of insects at Upsala, **84,** June 15.—Berlese, A. Phenomena which accompany fecundation in some insects, figs.. **114,** vi, vii.—Cuénot, L. The means of defense of animals, **30 b.** Felt, E. P. Collection, preservation and distribution of New York insects, figs, **112.** 26, April.—Folsom, J. W. The segmentation of the insect head, **5,** Aug.—Fritsch, A. Fauna der Gaskohle und der Kalksteine der Permformation Böhmens, Bd. iv, heft I Insecta, Myriopoda. Pars I. Prag, 1899, 12 pls., figs.—Harrington, W. H. Entomological recollections, **37,** May.—Howard, L. O. The Thomson Mayr priority question settled, **102.**—Huard. V. A. The study of entomology, **37,** June.—Jänichen, R. Acetic ether a good insect-killing medium, **84,** July 13.—Kienitz-Gerloff. F. Plateau's new researches on the relations between insects and flowers: study on the role of some organs called vexillary, **81.**—Künckel d'Herculais, J. On ecdysis in insects considered as a means of defence against animal or vegetable parasites—special roles of the tracheal and intestinal ecdyses [transl from C. R. Acad Sci. Paris], **11,** July.—Meldola, R. Mimicry and warning colors, **10,** May 18.—Oudemans, J. T. De Nederlandsche Insecten. Aflevering 11. s'Gravenhage Martinus Nijhoff, '99.—Plateau, F. New researches on the relations between insects and plants, **30.**—Porter, C. E. Catologo metodico provisional de las colecciones Zoolojicas, I Artropodos i Vermes Chilenos, Museo de Historia Natural de Valparaiso, 1899. [213 Insects, 5 Arachnids, 2 Myriopods]. Data for a knowledge of the insects of the department of

Quillota [Chile—in Spanish]. **58.** —Ris, F. Obituary of Prof. Gustav Schoch, **56.** Roy, E. Vitality of insects, **37.** June.—Sherborn, C. D. An index to the generic and trivial names of animals, described by Linnaeus, in the 10th and 12th editions of his "Systema Naturæ," publication 25, Museum Handbooks, the Manchester Museum, Owens College, '99.—Speiser, P. On reduction of the wings in ectoparasitic insects, **84**, May 18, 25.—Trotter, A. Did Redi indeed believe that galls and their makers were generated by a "anima vegetativa" of plants? Bulletino, Societa Veneto-Trentina di Scienze Naturali, vi, 4, Padua. '99.—Tutt, J. W. The scientific aspects of entomology, [and] Presidential address [on study of natural history as a science]. Proceedings, South London Entomological and Natural History Society, '98, pt. ii, '99.—Wasmann, E. G. D. Haviland s observations on the termitophily of *Rhopalomelus angusticollis* Boh., **44**, 4, May 9.—Wheeler, W. M. Anemotropism and other tropisms in insects, Archiv für Entwicklungsmechanik, viii, 3, Leipsic, June 27, '99.

Economic Entomology.—Anon. Abstracts of recent literature, Experiment Station Record, x, 9, U. S. Dep't of Agriculture, Washington, '99.—Anon. American literature on the San José scale, **24**.—Anon. The San José scale, **87**, May 27.—Austen, W. Bookworms in fact and fancy, Appleton's Popular Science Monthly, New York, June, '99.—Berlese, A., and Leonardi, G. American Coccidæ which threaten European fruit-culture, figs., **114**, vi, vii.—Cockerell, T. D. A. Notes on Australian Coccidæ, Victorian Naturalist, Melbourne May, '99.—Crump, W. The pear midge, Gardener's Chronicle, London, May 27, '99.—Felt, E. P. Shade tree pests in New York State, figs., 5 pls., **112**, 27, May.—Finlay, C. J. Mosquitoes considered as transmitters of yellow fever and malaria, **5**, July.—Fuller, C. A new poultry pest (*Simulium*, sp.), figs., Agricultural Journal, Cape Town, Jan. 5, '99.—Grassi, B. Relations between malaria and certain special insects, **113**; Malaria propagated by the means of certain special insects, **113**.—Hericourt, J. Contagion through the medium of insects [in Spanish, translated from Revue des Revues Paris, April 1, '99], Anales Sociedad Cientifica Argentina, Buenos Aires, May, '99. Hopkins, A. D. Report on investigations to determine the cause of unhealthy conditions of the spruce and pine from 1880-1893, figs., Bulletin 56, West Virginia Agr. Exper. Station, Morgantown, W. Va., April, '99.—Howard, L. O. The principal insects affecting the tobacco plant, figs., Yearbook, U. S. Dep't of Agriculture, Washington, 1898; Pests of the hop crop, figs., advance sheets (pp. 113–158) of a work on the Hop Industry, Orange Judd Co.—Hunter, S. J. The commotion in Kansas and Missouri upon the appearance of *Dissosteira* in Colorado, **5**, July.—Johnson, W. G. The Mediterranean flour moth again, **4**, June; Isaac P. Trimble, economic entomologist, **102**,—

Kirby, W. F. The gipsy moth and its introduction into America, figs., 10, May 25.—Larbaletrier, A. The fly of the olive, 79, May 27.—Marlatt, C. L. A dangerous European scale insect [*Aspidiotus ostreæformis* Curtis], not hitherto reported, but already well established in this country, 68, July 7; An investigation of applied entomology in the Old World, 102 —Mühling, P The carrying of disease by bugs and leeches, 82, May 29.—Nutall, G. H. F. Later researches on the role of mosquitoes in the distribution of malaria, 82, June 19.—Rainbow W. J The Queensland cattle tick, Records of the Australian Museum, iii, 5, Sydney. April 17, '99 Schenkling-Prévot. The apple-tree spinner (*Hyponomeuta malinella* Zell), 84, May 11. —Scott. W. M. Legislation against crop pests Dangerous pests prescribed by the Board, with remedial suggestions, figs. Bulletin No 1 Georgia State Board of Entomology, Atlanta, April, '99 —Sirrine, F. A Combating the striped beetle on cucumbers, figs., Bulletin 158 New York Agric. Exper. Station, Geneva, N. Y., May, '99.—Webster, F M. Fatal temperature for *Diaspis amygdali* Tryon, 4, June; The tobacco flea-beetle (*Epitrix parvula*) attacking tobacco in barn, 4, July —Zimmermann, H. On the life-history of, and on combating the apple-spinner, 84, June 8.

Arachnida.—Banks, N A new species of the genus *Halarachne*, figs.,* 102; An American species of the genus *Cæculus*,* fig., 102; Some spiders from northern Louisiana,* 102; *Tarsonemus* in America, figs., 102; A new Solpugid from California,* 102; Arachnida,* See the General Subject, figs —Berlese, A. On the mesintestine of some Arachnida. 114, vii —Borelli, A. Travels of Dr. A Borelli to the Argentine Republic and Paraguay. xxiii. Scorpions, 25, 336; Scorpions collected at Darien by Dr. E. Festa, 25, 338; Travels of Dr. E. Festa to Ecuador and the neighboring regions. xviii. Scorpions. 25, 345 —Calandruccio. S. The ectoparasitic Ixodidæ of man, Bulletino, Accademia Gioenia di Scienze Naturali in Catania, April, '99.—Canestrini, G. and Kramer, P. Demodicidæ and Sarcoptidæ. Das Thierreich, 7 Lieferung, Berlin, April, '99. pp. xvi, 193 31 text-figs.—Cook, O. F *Hubbardia*, a new genus of Pedipalpi,* 1 pl., 102.—Goeldi, E. A. Arachnological studies relating to Brazil [in Portugese], Boletim do Museu Paraense de Histeria Natural e Ethnographia, ii, 4. Para, Dec., '98; *Epeiroides bahiensis* Keyserling, a twilight spider of Brazil, fig., 1 pl., Zoologische Jahrbücher (Abtheil. f. System.), xii., 2, Jena, April 25, '99 —Kraepelin, K. Scorpiones and Pedipalpi. Das Tierreich. 8 Lieferung, Berlin R. Friedländer u. Sohn. March, 1899 Pp xviii, 265 94 text-figs; —Meinert, F. On the Pycnogonida collected by the "Ingolf" expedition [in Danish], 115.—Pokrowsky, S. Observations on oviposition of Phelcus, [and] Still a pair of head-tubercles in spider embryos, figs. 22, June 26.—Sabbatani, L. Anti-coagulating ferment of Ixodes ricinus. **113**.—Schenkling-Prévot Obtainance of food and nest-building of *Theridium riparium* (Blacw.) Thor., **84**, June 1. Supino, F. Observations on the anatomy of the pseudoscorpions, figs., Rendiconti, Reale Accademia di Lincei, Rome, June 18, '99.—Wolcott, R. H. On the North American species of the genus *Atax* (Fabr) Bruz , 5 pls. Transactions, American Microscopical Society, xx, Lincoln, Nebraska, Hunter Printing Co , May, '99.

Peripatus and Myriopods.— Boas, J. E. V. On the place of *Peripatus* in the animal kingdom [in Danish]. **115**.—Cook, O. F. The Geophiloidea of the Florida Keys, 2 pls.,* **102**; Myriapoda. See the General Subject —Duboscq, O. Researches on the Chilopods, 7 pls., Archive de Zoologie Experimentale et Generale, (3) vi. 4, Paris, '98. Rec'd. June 9, '99 —Kenyon, F.C. A new Mexican Diplopod *Decaporodesmus motzorangınis*, type of a new family Decaporodesmidæ, **102**.—Peach, B. N. On some new Myriapods from the Palæozoic rocks of Scotland, 1 pl., Proceedings, Royal Physical Society, Edinburgh. Session '97-'98, Feb., '99 —Porter, C E. Introduction to the study of the Myriapods of Chile (cont.), [in Spanish], **58**—Purcell, W. F. On the South African species of Peripatidæ in the collection of the South African Museum, Annals, South African Museum, i, 2, (London), March, '99.

Apterygota —Cook, O. F. New Dicellura. 2 pls ,* **102**.

Orthoptera.—Bolivar, I. Revision of the Pyrgomorphinæ of the section Ommexechæ [in Spanish]. **58**.—Bordage, E. Regeneration of the limbs in the Mantidæ and constancy of the tetramery of the tarsus of regenerated limbs after autotomy in the pentamerous Orthoptera, **12**, June 26; On the absence of regeneration of the hind limbs of the jumping Orthoptera and its probable causes, **12**, July 10.—Burr, M. Abbreviation of wings in Orthoptera, **21**, June 1; Exotic Conocephalidæ in England, **21**, May 15; Parasites of Orthoptera, **21**, July 1 —Comstock, J. H., and Needham, J. G. The wings of insects, chapter iv (concl.), figs. [Orthoptera], American Naturalist, Boston. July, '99.—Coupin, H. Natural history of the praying mantis, **87**, July 1. —Leger, L., and Duboscq, O. On the Malpighian tubes of the cricket · Observations on the preceding note by A Giard, Comptes Rendus, Société de Biologie, Paris, June 24, '99.—McNeill, J. Arkansas Melanopli, iii,* **5**, June —Scudder, S. H. The North American species of *Orphulella*,* **4** July; An index to Stal's genera of Orthoptera, supplement to, **5**, Aug.—Tutt, J. W. Migration and dispersal of insects; Orthoptera, **21**, May 15.

Neuroptera.—Banks, N. Descriptions of New North American Neuropteroid insects,* **2**, xxv, 3, Jan ; Neuroptera, See the General Subject.—Calvert, P. P. Odonata from Tepic, Mexico, with supplementary notes on those from Baja California, figs., 1 pl.* Proceedings, California Academy of Sciences (3) i, 12, San Francisco

May 22, '99; Parallelisms in structure between certain genera of Odonata from the Old and the New Worlds, **I**.—Hine, J. S. Additions to the list of Ohio dragon-flies, **III**.—Kirby, W. F. On a collection of Odonata (Dragon-flies) from Panama,* 1 pl, **II**. May.—McLachlan, R. Notes on certain Palæarctic species of the genus *Hemerobius*, Nos. 2, 3, figs., **8**, June, July.—Tutt, J. W. Migration and dispersal of insects: dragon-flies, **21**, June 11 July 1.

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DOINGS OF SOCIETIES.

A meeting of the American Entomological Society was held June 22, Vice President Johnson in the chair. Thirteen persons were present. A large collection of coleoptera was presented by Mr S. N Dunning, of Hartford, Conn. Mr H W. Wenzel presented 200 specimens of Orthoptera. The thanks of the Society were tendered these two gentlemen for their generous donations. Mr. Liebeck spoke of the long life of a barkbeetle, *Rhagodera tuberculata*, which had been sent, gummed on a card, from Los Angeles, Cal, to South Dakota and thence to Philadelphia, and was received in the latter city alive. Mr Johnson exhibited a small saw-fly, *Claudia pectinicornis*, which had been determined by Mr. Ashmead. He had bred them in rearing the larvæ of the rose leaf roller, tortricid. It is probably an introduced species. Mr. Reif stated that he had found about 500 larvæ of *Apatura celtis* on *Celtis occidentalis* at Bethlehem, Pa. The larvæ is pale green with an antlered head and a forked tail, It is rare in the State, Dr. Skinner reported the capture by Mr. Wilmer Stone, of *Melitaea Harrisii* at Lopez, Sullivan county, Pa. The proposed directory of American Entomologists to be published by the Society was mentioned by the same speaker and ways and means of getting information for it were discussed. The chairman announced the death of our fellow member, Dr. Horace G. Griffith, and said his interest in natural science was well known to the members, and that his loss would be keenly felt. HENRY SKINNER,
Sec.

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At the May meeting of the Feldman Collecting Social held at the residence of Mr. H. W. Wenzel, 1523 South Thirteenth street, Philadelphia, twelve persons were present.

Mr Seiss read an article from a recent number of *Gleanings in Bee Culture*, in which it was asserted that dragon-flies are not injurious to bees in northern climates. The writer accounted for the devouring of bees by dragon-flies in the South by saying that the males migrated in the fall, at which time they apparently changed their diet from mosquitoes and other insects to bees. The speaker regarded this theory as ridiculous.

Mr. Johnson stated that *Aeschna ingens* is extremely destructive to bees in Florida.

Mr. Boerner exhibited specimens of *Trichopteryx Haldemani* from near Gloucester, N. J.

Dr. Castle exhibited some recent captures of Coleoptera including *Dichelonycha fuscula*. Out of 49 specimens taken on May 3d. only one female was present; on May 6, 50 per cent were females, and on May 12 and 15 over 90 per cent. were of that sex.

Dr. Skinner pointed out that discrepancy between the sexes as to numbers is not as great as has often been supposed by writers Knowledge of the life history of the species will no doubt show that the sexes are nearly equally proportioned as to numbers.

Mr. Seiss stated that out of 30 specimens of *Cryptus nuncius* reared there were 28 females and in another series of 30 reared two days later, only four were females.

Dr. Skinner remarked that on April 30th, near Westville, N. H. he observed a dragon fly chasing a specimen of *Anthocharis genutia*. The dragon-fly kept along a road running through the woods where insects were easily seen, which act was probably an indication of intelligence on the part of the dragon-fly. A specimen of butterfly which had been dropped by the odonat had the wings and thorax intact but the soft body parts had been devoured.

Mr. Johnson exhibited *Psychoda Slossoni*, *superba*, *alternata* and *marginalis*. The latter was described from New York State and he had recently found abundantly near Riverton, N. J. Also specimens of *Stictocephala vau* which he had found commonly in the larval state under bark, near Overbrook, Pa. He also recorded the capture by C. Greene, near Darby, Pa., on May 7, of *Brachyopa vacua*. It had not before been recorded from so far south

Mr. Johnson recorded the occurrence of *Anthocharis genutia*, April 23 and April 30 at Riverton, N. J. On former date two males were taken and on April 30 four females, three males

Dr. Skinner reported the capture of the same species at Clementon, May 7 and at Westville on April 16, 23 and 30.

Mr. H. Wenzel stated that in the old list of insects of New Jersey there were thirteen species of *Pselaphidæ* mentioned. In the forthcoming list the number will be increased to 32 species as far as his own collection is concerned These were all taken between January 28 and April 14. The late fall and winter months seem to be the best time for collecting these insects by means of sieving. He had taken several specimens of *Pselaphus fustifer* and six specimens of *Bithenus tychoides*, both of which had been described from unique specimens. *Pselaphus fustifer* had been referred by Brendel as a synonym of *P. longiclavus* with which conclusion the speaker did not concur. He also recorded the capture of a specimen of *Cychrus elevatus* at Anglesea, N. J., on May 7.

Dr. Skinner stated that the seashore representatives of many species show marked differences from those found further inland.

William J. Fox, Secretary.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

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NOCTUIDAE OF WEBSTER. N. H.

BY CHARLES F. GOODHUE.

The town of Webster is in central New Hampshire, about sixteen miles northwest of Concord, the capital of the State. The country is hilly and well wooded, with but very little low meadow land. We have collected here every year, more or less, for twenty years, beginning early in the season and only stopping with cold weather late in the fall. We do not mean that we have collected every day or even every week, but such time as we could spare from the usual work which falls to the lot of a New Hampshire farmer. We usually have a small cyanide pot in our pocket most of the time from March until November, and by this means we get many a rare thing that would not otherwise have been found. We wish to extend our thanks to Prof. J. B. Smith in particular for the naming of many species unknown to us and for time spent in verifying a large number of our more common species; also for many other favors best known to those interested.

No species are included in the following list that have not been taken here either by us or that we know personally to have been taken in town by others. Mr. W. F. Fiske collected two or three years at the south end of the town, and during that time he found some dozen or more species that we never met with here, for which credit will be given as they occur in the list.

THYATIRA.

Scripta Gosse. Rather rare ; middle June.

EUTHYATIRA

Pudens Gn. Rare. Last of April and first of May.

PSEUDOTHYATIRA.

Cymataphoroides Gn. Not common ; middle June.

We would like to ask if any one has ever bred this and the following form from the same lot of eggs, or if any one has intergrades that fill the gap between the two. We have never seen any variation in the form *expultrix*, and where any occurs in *cymataphoroides* it is away from *expultrix*, the ground color being lighter with a pinkish shade and the markings heavier and darker.

Expultrix Grt. Rather common ; middle to last of June.

LEPTINA.

Doubledayi Gn. Rare ; June to July.

Ophthalmica Gn. Rare ; June to July.

Dormitans Gn. Common ; May and June.

PANTHEA

Furcilla Pack. Rare ; last of May.

DEMAS.

Flavicornis Smith. Rare ; last of June.

Propinquilinea Grt. Rare ; middle of July.

RAPHIA.

Frater Grt. Very rare ; July.

CHARADRA.

Deridens. Very rare ; June.

FERALIA.

Jocosa Gn. Not common ; last of April, first of May.

Major Smith. Rare ; middle of April.

MOMOPHANA.

Comstocki Grt. Very rare ; April.

MOMA.

Fallax H. Sch. Uncommon ; last of July.

ARSILONCHE.

Albovenosa Goeze. Not common ; July.

Ab. fumosum Morr. One specimen ; last of May.

ACRONYCTA.

Americana Harris. Common ; June and July.

Dactylina Gt. Common ; middle of July.

Leporina Linn. Rare ; August.

Innotata Gn. Rather common ; June and August.

Morula G. and R. Rare ; middle of June.

Occidentalis G. and R. Not common ; May and June.

Hasta Gn. Rare ; last of June.

Radcliffei Harr. Not common ; May and August.

Pruni Harr. Not common ; June and July.

Brumosa Gn. Not common ; May and June.

Superans Gn. Common ; May and June.

Tritona Hubn. Quite rare ; last of June.

Funeralis G. and R. Very rare. Have never met with this species but twice ; June.

Fragilis Gn. Rare.

Vinnula Gt. Rare. Mr. Fiske has taken one specimen.

Grisea Wlk. Quite rare.

Ovata Gt. Rather common ; July.

Modica Wlk. Rare ; last of June.

Clarescens Gn. Common ; June.

Hamamelis Gn. Not common ; June.

Retardata Wlk. Not common ; June and July.

Luteicoma G. and R. Rather rare ; last of May.

Sperata Gt. Rare ; first of June.

Noctivaga Gt. Common ; last of May.

Impressa Wlk. Common ; May, July and August.

Oblinita S. and A. Rather common ; June.

Lanceolaria Gt. Very rare ; June.

Dentata Gt. Very rare ; Mr. Fiske took one in 1896.

HARRISMEMNA.

Trisignata Wlk. Rare ; June and July.

CERMA.

Cora Hbn. Very rare ; last of June.

POLYGRAMMATE.

Hebraicum Hbn. Very rare ; middle of July to middle of August.

MICROCELIA.

Diptheroides Gn. Common ; middle May to last of June.

Var. *obliterata* Gt. More common than the last.

BRYOPHILA.

Lepidula Gt. Rather common ; June and July.

CHYTONIX.

Palliatricula Gn. Common ; May and June, again in August. Larva on elm, several on the same twig, but hardly gregarious, though they may be during the early stages.

RHYNCHAGROTIS.

Gilvipennis Gt. Rather rare ; middle July.

Anchocelioides Gn. Common ; July and September.

Placida Gt. Not common ; July and August.

Alternata Gt. Common ; last of July.

ADENPHAGROTIS.

Prasina Fabr. Not common ; July.

PLATAGROTIS.

Pressa Grt. Rare ; last of June.

Condita Gn. Very rare ; one specimen in June.

EUERETAGROTIS

Sigmoides Gn. Rare ; middle of July.

Attenta Grt. Rare ; middle of July.

Perattenta Grt. Very rare ; in July.

SEMIOPHORA.

Elimata Gn. Rather common ; last of July and first of August.

The larva feeds on the white pine. We have found it the first of November full fed. It is pale green in color, almost the same shade as the needles, on which it feeds. There is a narrow white dorsal line and one of black edged with white on the sides. It makes a cell beneath the leaves on the top of the ground and remains in the larva state until the next June, when it changes to pupa without having fed since the November before. The moth comes out the last of July. Guenee's description of the larva and food plant do not agree with this at all, and it is just as likely to have been the larva of what Morrison and Grote describe as *dilucida* and *janualis*, as of *elimata*.

Dilucida Morr. Rather rare ; September.

This species and the one preceding have been considered as the same, but we feel very sure they are distinct, *elimata*, showing but little variation and comes the last of July. *Dilucida* varies much and comes the first of September. Besides, the length of time taken by *elimata* in the larva state will not admit of two broods.

Tenebrifera Wlk. Two examples; last of April.

PACHNOBIA.

Hæsitans Wlk. One specimen; last of May, at light. Walker's specimen came from the Rocky mountains.

Salicarum Wlk. Common; last of April.

Fishii Grt. Not common; last of April.

AGROTIS.

Badinoides Grt. Common; last of August, first of September.

Violaris G. and R. Rare; one specimen last of August.

Ypsilon Rott. Common; May and June, September to November.

Geniculata G. and R. Not common; August.

PERIDROMA.

Occulta Linn. Rare; June.

Astricta Morr. Rare; July and August.

Saucia Hbn. One specimen; last of August.

NOCTUA.

Baja Fabr. Common; June to first of August.

Normaniana Grt. Common; July.

Bicarnea Gn. Not common; July and August.

C-nigrum Linn. Not common; June and October.

Jucunda Wlk. Rare; August.

Rubifera Grt. One example; last of July.

Phyblophora. Quite rare; middle of July.

Fennica Tausch. One specimen; middle July.

Plecta Linn. Rather common; May and July.

Collaris G. and R. Common; August.

Haruspica Grt. Common; July.

Clandestina Harr. Common; June and July.

Lubricans Gn. Common; July and August.

FELTIA.

Subgothica Harv. Common; July and August.

Jaculifera Gn. Rather rare; last of August.

Herilis Grt. Rather rare; last of August.

Venerabilis Wlk. Common; September.

Volubilis Grt. Rather common; May and June.

We take a peculiar variety of this species here, that Prof. Smith at first thought to be *æneipennis*.

POROSAGROTIS.

Vetusta Wlk. Rare; last of August.
Catenula Grt. Rare; one specimen; last of September.
Mamallonis Grt. Rare; Mr. Fiske has taken one example.
Triparis Wlk. Rare; August and September at light.

CARNEADES.

Fumalis Grt. Rare; last of May.
Velleripennis Grt. Rather rare: August.
Detersa Wlk. Common; September.
Bostoniensis Grt. Rare; August.
Messoria Harr. Common; August and September.
Pleuritica Grt. Rare; Mr. Fiske has taken one specimen.
Insulsa Wlk. Rare; last of July.
Tessellata Harr. Common; July and August.
Albipennis Grt. Rare; August.
Obeliscoides Gn. Common; July and August.
Redimacula Morr. Common; July and August.
Divergens Wlk. Rare; one specimen; June.

ANYTUS.

Privatus Wlk. Common; September.

MAMESTRA.

Nimbosa Gn. Rare; August.
Imbrifera Gn. Rare; July and August.
Purpurissata Grt. Rare; August.
Meditata Grt. Common; August and September.
Lustralis Grt. Rare; one specimen.
Detracta Wlk. Common; July.
Subjuncta G. and R. Common; July and August.
Grandis Bdv. Common; June.
Trifolii Rott. Rare; June.
Rosea Harv. Common; last of May.
Congermana Morr. Rare; May.
Rubefacta Morr. Rare; June.
Picta Harr. Common; May and September.
Cristifera Wlk. Not common; May.
Assimilis Morr. Rare; July.
Latex Gn. Common; June.

Adjuncta Bdv. Rather rare; May and June.
Legitima Harv. Not common; May and June.
Lilacina Harv. Not common; July.
Goodelli Grt. Rare; July.
Renigera Steph. Common; July.
Olivacea Morr. Common; August.
Lorea Gn. Common; June.
Anguina Grt. Rare; June.

ULOLONCHE.

Modesta Morr. Common; May and June.

LUPERINA.

Passer Gn Not common. Mr. Fiske has taken it.

XYLOPHASIA.

Remissa Hbn. Rare; July.
Apamiforinis Gn. Rare; July and August.
Suffusca Mon. Rare; last of July.
Vultuosa Grt. Rare; last of June.
Finitima Gn. Common; May and June.
Lateritia Hfn. Rare; June.
Dubitans Wlk. Common; August.
Impulsa Gn. Rare; July.
Devastatrix Brace Common; July.
Arctia Bdv. Common; July.
Verbascoides Gn. Common; July.
Vulgaris G. and R. Rare; July.
Lignicolor Gn. Common; July.

HADENA.

Fractilinea Grt. Common; July and August.
Minuscula Morr. One specimen.
Mactata Gn. Common; July and August.
Modica Gn. Common; August.
Diversicolor Morr. Rare; September.

HILLIA.

Crasit H. Sch. Rare; one specimen; Mr. Fiske.

OLIGIA.

Festivoides Gn. Common; June and July.
Chalcedonia Hbn. Rare; August.

PERIGIA.

Vecors Gn. Rare; August.

DIPTERYGIA.

Scaburiscula Linn. Common ; June.

HYPPA.

Xylinoides Gn. Common ; June and September.

The full-grown, large, dark, brownish larva we find early in spring, often crawling over the ice and snow round low ground.

MACRONOCTUA.

Onusta Grt. Rare ; July ; one specimen.

ACTINOTIA

Ramosula Gn. Common ; June and August.

CONSERVULA.

Anodonta Gn. Rare ; Mr. Fiske has taken two examples in August, we believe.

TRIGONOPHORA.

Periculosa Gn. Common ; August.

BROTOLOMIA.

Iris Gn. Common ; June.

EUPLEXIA

Lucipara Linn. Common ; June.

NEPHELODES.

Minians Gn. Common ; September.

TRICHOLITA.

Signata Wlk. Rather rare ; August.

HELOTROPHA.

Reniformis Grt. Not common ; August.

HYDRŒCIA.

U-album Gn. One specimen ; last of July.

Velata Wlk. Common ; June and July.

Nictitans Linn. Common ; July.

Purpurifascia G. and R. Rare ; August.

Inquæsita G. and R. Rare ; September.

Limpida Gn. Rare ; September.

Nitela Gn. Rare ; September and October.

Var. *Nebris* Gn. Common ; September and October.

ACHATODES.

Zeæ Harr. Rare ; Mr. Fiske has taken two or three.

PLATYSENTA.

Videns Gn. Rare ; July.

LEUCANIA.

Pallens Linn. Common ; June.

Albilinea Hbn. Common ; June and August.

Phragmatidicola Gn. Common ; June and September.

Insueta Gn. Common ; June.

Commoides Gn. Common ; June.

Unipuncta Haw. Common ; June and September.

This species fairly swarmed during the fall of 1896. Over-ripe apples rubbed on trees were completely covered.

Pseudargyria Gn. Common ; May and July ; sp. nov.; one example.

Prof. Smith writes me that he has received this species from Calgary during the past summer and thinks it new.

UFEUS.

Satyricus Grt. Rare ; October, November and April.

RIVULA.

Propinqualis. Common ; June and July.

AMOLITA

Fessa Grt. Rare ; July.

BALSA.

Malana Fitch. Common ; May and June.

Tristrigella Wlk. Common ; May and June.

CRAMBODES.

Talidiformis. Rare ; June.

CARADRINA.

Miranda Grt. Common ; June.

Meralis Morr. Rare ; last of July.

Multifera Wlk. Quite common ; August and September.

AMPHIPYRA.

Tragopoginis Linn. Rare ; August ; taken by Mr. Fiske.

Pyramidoides Gn. Common ; August and September.

ORTHODES.

Crenulata Butler. Common ; June and July.

Cynica Gn. Common ; June and July.

Vecors Gn. Rare : July and August.

HIMELLA.

Contrahens Wlk. Common ; June and July.

CROCIGRAPHA.

Normani Grt. Common ; April and May.

TÆIOCAMPA.

Peredia Grt. Rare ; July.

Oviduca Gn. Common; May and June.
Alia Gn. Common; April and May.
Rubrescens Wlk. Rare; April and May.
Subterminata Smith. Common; April and May.

This species shows more variation than any other found here, unless it be some of the Homoptera.

CALYMNIA.

Orina Gn. Rare; July.

ANCHOCELIS.

Digitalis Grt. One specimen; August.

PYRRHIA.

Umbra Hufn. Common; May and June.
Var. *experimens* Wlk. Rare; June.

ORTHOSIA.

Bicolorago Gn. Common; September.
Euroa G. and R. Rare; July.
Helva Grt. Common; July.
Lutosa Andrews. Not common; July.

HOMOGLÆA.

Hircina Morr. Rather rare; April.
Carnosa Grt. One specimen; September.

GLÆA.

Inulta Grt. Common; September.
Sericea Morr. Rare; September.

EPIGLÆA.

Apiata Grt. Rare. Have taken three or four in October among cranberry vines in a very wet bog.
Decliva Grt. Rare; September.

XANTHIA.

Flavago Fabr. Very rare; September.

CIRRŒDIA.

Pampina Gn. Common; August and September.

SCOLIOPTERYX.

Libatrix Linn. Not common; May, July, October.

SCOPELOSOMA.

Indirecta Wlk. Common; November and April.
Pettiti Grt. Rare; April.
Tristigmata. Common; November and April.
Walkeri Grt. Rare; April.
Sidus Gn. Rare; November and April.

Morrisoni Grt. Common ; November and April.
Devia Grt. Rare ; April.

LITHOLOMIA.

Napœ Morr. Not common ; October and April.

XYLINA.

Disposita Morr. One specimen ; April.
Signosa Wlk. Common ; October and April.
Ferrealis Grt. Common ; October and April.
Innominata Smith. Common ; October and April.
Bethunei G. and R. Common ; October and April.
Contenta Grt. One specimen ; May. Prof. Smith gives the Habitat as California.
Fagina Morr. Common ; October and April.
Georgii Grt. Rare ; April.
Antennata Wlk. Common ; September and April.
Laticinerea Grt. Common ; October and April.
Grotei Riley. Rare ; October.
Unimoda Lintn. Common ; October and April.
Tepida Grt. Not common ; April.
Baileyi Grt. Not common ; October and April.
Lepida Lintn. Rare ; April.
Pexata Grt. Common ; September and April.
Thaxteri Grt. Rare ; October and April. Two species not yet determined.

MORRISONIA,

Sectilis Gn. Common ; April.
Confusa Hbn. Rare ; May.

XYLOMIGES.

Dolosa Grt. Rare ; May.

LITHOMIA.

Germana Morr. Rare ; in September.

CALOCAMPA.

Nupera Lintn. Not common ; October and April.
Cineritia Grt. Common ; October and April.
Thoracica Put. Cram. Common ; October and April.

This is as distinct a species as any of the others belonging to the genus. The species of Calocampa show but very little variation ; in fact, we have never seen a specimen that could be called a var. out of hundreds taken.

Since the above was written Prof. Smith writes me that he finds *cineritia* and *thoracica* distinct species in genital characters.

Curvimacula Morr. Common ; October and April.

CUCULLIA.

Convexipennis G. and R. Not common; June.

Postera Gn. Not common ; May and June.

Speyeri Lintn. Not common ; August. We can see no difference between this and *dorsalis* from Colo.

Intermedia Speyer. Common ; June.

MARASMALUS.

Inficita Wlk. Rare; July.

Ventilator Grt. Rare ; June.

ALETIA

Argillacea Hbn. Rare ; September.

OGDOCONTA.

Cinereola Gn. Not common ; August.

DEVA.

Purpurigera Wlk. Rare ; middle of July.

PLUSIA.

Ærea Hbn. Not common ; July.

Æreoides Grt. Not common ; July and September.

Balluca Geyer. Rare; July.

Contexta Grt. Rare; June and August.

Putnami Grt. Rare ; June.

Formosa Grt Rare ; July.

Thyatioides Gn. Rare ; September.

Precationis Gn. Common ; July, August, September.

Mortuorum Gn. Rare.

Octo-scripta Grt. Rare; July and August.

Epigæa Grt. Rare ; June and July.

Ampla Wlk. Rare ; July

Simplex Gn. Very common ; several broods.

CALPE

Canadensis Beth. Not common ; July.

HELIOTHUS.

Armiger Hbn. Only two or three specimens ; August.

DERRIMA.

Henrietta Grt. Two examples ; last of July.

ALARIA.

Florida Gn. Common; July.

SCHINIA.

Nundina Dm. Rare; July.

Marginata Haw. Sometimes common; July and August.

Brevis Grt. One specimen; last of August.

MELAPORPHYRIA.

Immortua Grt. Rare. Mr. Fiske has taken several in June.

ACONTIA.

Erastroides Gn. Rather rare; May.

Canadefacta Hbn. Common; May and June.

CHAMYRIS.

Cerintha Tr. Common; middle of June.

PROTHYMIA.

Semipurpurea Wlk. One specimen; June.

METATHORASA.

Monetifera Gn. Common; June.

EUHERRICHIA.

Mollissima Gn. Rather rare; June and July.

LITHACODIA.

Bellicula Hbn. Common; June.

ERASTRIA.

Albidula Gn. Common; June.

Concinnimacula Gn. Not common; May.

Synochites G. and R. Common; July.

Muscosula Gn. Common; July.

Apicosa Haw. Common; August.

Carneola Gn. Common; May and June.

THALPOCHARES.

Æthria Grt. Several specimens; June and July. Florida has heretofore been given as its habitat.

DRASTERIA

Erechtea Cram. Common; May, July, September.

EUCLIDIA.

Cuspidea Hbn. Common; May and June.

SYNEDA.

Graphica Hbn. One specimen; middle of June.

MELIPOTIS.

Limbolaris Geyer. Not common; middle of June.

CATOCALA.

Nubilis Hbn. Common; June and July.

Amica Hbn. Common; July and August.
Var. *lineella* Grt. Common; July and August.
Gracilis Edw. Common; July and August.
Grynea Cram. Common; July and August.
Præclara G. and R. Common; July and August.
Micronympha Gn. Rare; August.
Similis Edw. Rare; August.
Amasia S. and A. Rare; August.
Cratægi Saund. Common; July and August.
Cerogama Gn. Common; July and August.
Var. *bunkerii* Grt. Rare; July and August.
Ultronia Hbn. Common; July and August.
Coccinata Grt. Rather rare; July and August.
Ilia Cram. Common; July and August.
Parta Gn. Very rare; last of July.
Unijuga Wlk. Rather common; August.
Briseis Edw. Rather common; last of July.
Concumbens Wlk. Common; July to September.
Relicta Wlk. Rare; August to September.
Tristis Edw. Rare; August.
Epione Dm. Rare; July.
Antinympha Hbn. Common; July to September.
Badia, Var. *Phoebe* Grt. Rare; July to September.
Subnata Grt. Rare; July to September.
Retecta Grt. Rare; August.

FAGITANA.

Littera Gn. Rare; May and June; again in September.

POAPHILA.

Quadrifilaris Hbn. Rare; last of June.

PARALLELIA.

Bistriaris Hbn. Common; June and July.

AGNOMONIA

Anilis Dm. Rare; last of June. I am indebted to Mr. Fiske for a Webster specimen.

PANAPODA.

Var. *carnicosta*. Common; June and July.

EREBUS

Odora Linn. Very rare; July.

ZALE.

Horrida Hbn. Common; May and June.

PHÆOCYMA.

Lunifera Hbn. Common; May and June.

HOMOPTERA.

Edusa Dm. Rare; September.

Minerea Gn. Common; May and June. This species and *Phæocyme lunifera* vary immensely.

Cingulifera Wlk. Common; May and June.

Unilineata Grt. Not common; May and June.

Obliqua Gn. Rare; May and June.

YPSIA.

Undularis Dm. Common; May and June.

PSEUDOSTHRŒCIA.

Coracias Gn. Rather common; May and June.

HOMOPYRALIS.

Discalis Grt Not common; July.

Contracta Wlk. Common; June.

HYAMIA.

Perditalis Wlk. One specimen.

Sexpunctata Grt. Rather rare; June and July.

PANGRAPTA.

Decoralis Hbn Common; June and July.

PHALÆNOSTOTA.

Larentioides Grt. Rare; July and August.

PSEUDAGLOSSA.

Lubricalis Geyer. Common; July.

Roduntalis Wlk. Common; July and August.

EPIZEUXIS.

Æmula Hbn. Common; July.

Americalis Gn. Common; July.

ZANCLOGNATHA.

Lituralis Hbn. Common; June and July.

Theralis Wlk. Rather rare; July and August.

Minosalis Smith. Rather rare; August.

Lævigata Grt. Common; July.

Pedipilalis Gn. Rare; last of June.

Cruralis Gn. Rare; middle of July.

Protumnosalis Wlk. Rare; last of July.

Marcidilinea Grt. Rare; last of July
Ochreipennis Grt. Common; last of July.
One species not yet described.

HORMISA.

Absospatalis Wlk. Common; June and July.

PHILOMETRA.

Metonalis Wlk. Common; June and July.

CHYTOLITA

Morbidalis Gn. Common; June.
Petrealis Grt. Rare; June and July.

BLEPTINA.

Caradrinalis Gn. Common; June and July.

RENIA.

Sobrialis Wlk. Rare; last of July.
Factiosalis Wlk. Rare; July and August.
Flavipunctalis Geyer. Common; July and August.

HETEROGRAMMA.

Pyramusalis Wlk. Common; May and June.

PALTHIS

Angulalis Hbn. Common; June, August and September.

CAPIS.

Curvata Grt. Rather rare; June and July. Usually found in wet meadows.

BOMOLOCHA.

Manalis Wlk. Rare; June. ;
Baltimoralis Gn. Common; May, June, July, August.
Bijugalis Wlk. Rare; July.
Scutellaris Grt Common; June and August.
Abalinealis Wlk. Quite rare; June and July.
Deceptalis Wlk. Quite rare; July.
Madefactalis Gn. Quite rare; July.
Sordidula Grt. Rare; last of July.

LOMANALTES.

Eductalis Wlk. Common; June.

PLATHYPENA.

Scrabra Fbr. Common. We have taken this species every month from June to November.

HYPENA

Humuli Harr. Not common; April, May and July.

A NEW SPECIES OF PULVINARIA.

BY R. S. LULL, M. S.

Pulvinaria phaiæ, n. sp.

A new but very typical species of *Pulvinaria* was discovered in the plant house of the Massachusetts Agricultural College by Mr. R. A Cooley in April, 1897. The species was quite abundantly scattered over the under side of the leaves of a species of orchid, *Phaius maculatus* and of another *Phaius* somewhat similar, but undetermined. As all stages were represented, good opportunity was offered for some biological studies in this interesting genus.

The FEMALE, just before gestation, is oval in shape, measuring about 3mm. in length by 1.75mm. in breadth, though the size varies evidently with the abundance or scarcity of nourishment. In color the creature is in general a light, yellowish green, varying somewhat in different individuals, so as to approach very nearly to the general color of the leaf, rendering it nearly invisible.

The antennæ, curiously enough, show at least two distinct types with regard to the relative lengths of the various segments, and there are minor variations as well. The two types, A and B, which are both figured, are found about equally distributed among individuals, even on the same leaf. This fact leads me to wonder if too great stress may not have been laid on this much used specific character. A series of about twenty-five individuals was carefully examined with regard to the antennæ as well as other features. In type A segments 3 and 8 are equal and longest; next, segment 2; then, 4; next, 5; then, 6; and finally 7, the shortest of all being only one-third the length of segment 8. The apparent length of the basal segment varies so decidedly, depending upon the point of view, that I have thought it best to neglect it. Formula (38) 2 (4) 5 (6) 7. The basal segment bears three or four hairs, segment 2 bears two rather long hairs; segment 3, one, somewhat shorter; segment 4, none; segment 5, two long ones; 6, one: 7, one: while segment 8 bears seven or eight, one, apparently the longest, being terminal in position.

Type B shows the following relative length of segments: 8 is the longest; 5 almost equalling it; next 3, then 2; 4, 6 and 7 being subequal and shortest, seven being ⅔ the length of 8. Formula (85) 3, 2 (467). The hairs born by the various segments are approximately as in Type A. A series of four long and three short hairs, arranged symmetrically across the head, extends from the base of one antenna to that of the other. I have never seen them mentioned in any description, though my own observations prove to me that they do occur in other species, though varying in number and arrangement. These inter-antennal hairs are shown in the nearly mature female figured in figure 3.

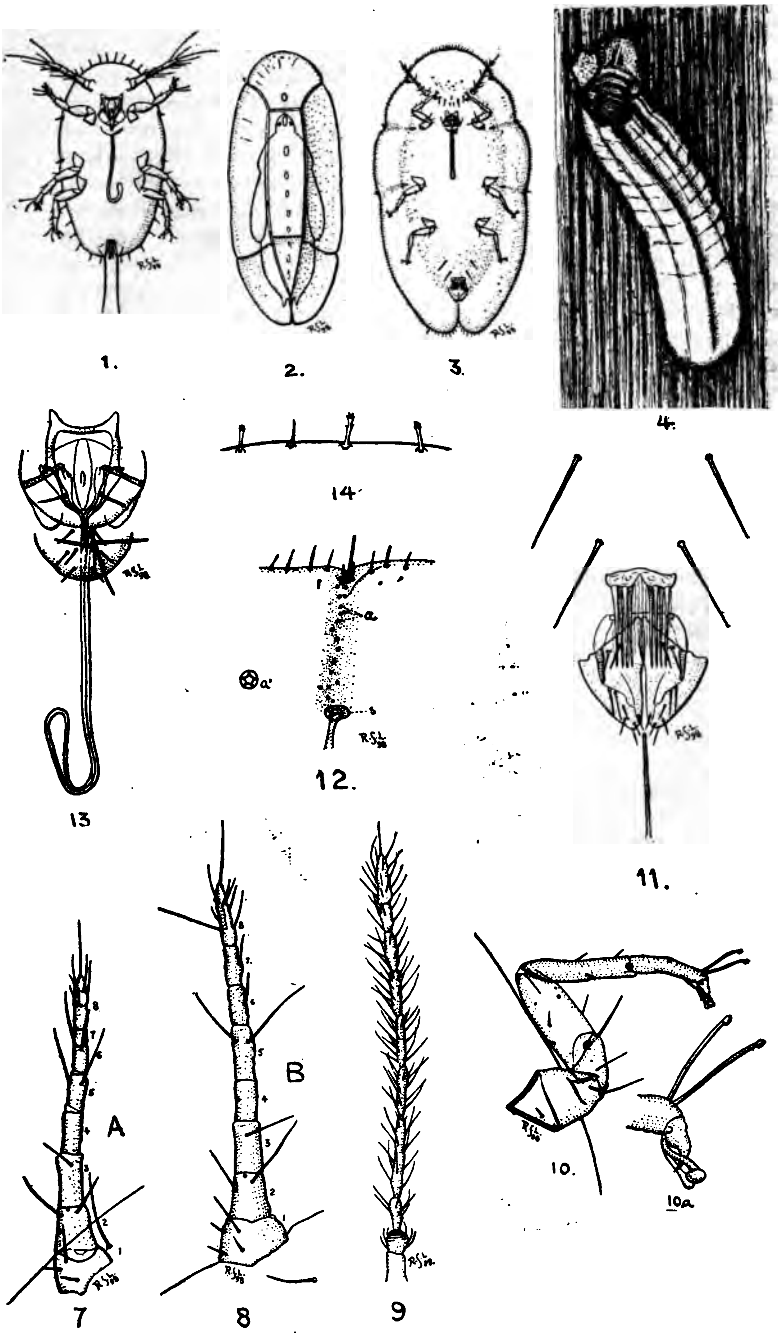
The legs (see fig. 10) are normal, somewhat stout in proportion to their length, tibia about the length of the femur; tarsus about two-thirds the length of the tibia. The tarsal claw is stout, quite strongly curved, and the tarsal digitules are slender, slightly more than one-half the length of the tarsus and with oblique knobs at the tip. The digitules of the claw extend beyond the tip of the claw, the knob of one being set very obliquely, that of the other straight. There is a long hair at the apex of the coxa; a long sensory hair at apex of trochanter and another shorter one near the base. The femur bears three or more short hairs and the tibia three.

The mouth structure is as follows: The mentum is monomerous, almost semi-circular in outline, and bears eight short hairs, only discernible under a high power. The rostral filaments are very long, the loop when entirely withdrawn reaching well into the abdomen. (See fig. 13.)

The anogenital structure (see fig. 11) presents quite a degree of complexity. The ring itself is difficult to see as such, as its plane is vertical in position, so that most preparations, as the one figured show only its edge. The ring bears eight tapering hairs, which are not analogous to the ordinary clothing or sensory hairs found elsewhere, but seem rather to be the chitinous stiffenings to a sort of membranous tube arising from the anogenital ring and extending to the middle, nearly, of the dorsal lobes. Putnam (Proc. Davenport Acad. Sci, Vol. II. p. 293 on) claims that this tube is waxy; but if so would it have withstood the treatment of boiling in potash and glycerine, which the specimen underwent during preparation? Every other bit of waxy secretion disappeared entirely during the process. His idea that the tube functions as an egg guide is undoubtedly correct. The dorsal lobes are triangular, the lateral angles forming almost a right angle, and each dorsal lobe bears about nine hairs of the sensory variety, as shown in the figure. A feature which I have never seen mentioned, though possibly occurring in other species, is the presence of four large hairs on the abdomen (see figs. 3 and 11), two on either side, a little in front of the anogenital apparatus. The two anterior ones are farther apart than the two posterior.

The marginal spines under very high power show, on the part of some at least, a peculiar branched condition at the tip (see fig 14). Those at the stigmatal depressions are in threes, one long, flanked by two short hairs. S. The stigmata themselves are situated some distance in from the margin of the scale, near the coxa of the fore and middle legs, with a sort of groove leading outward to the beforementioned spines This group is filled with a conspicuous line of dense, white cottony wax secreted by glands. whose openings lie scattered in an irregular row beneath it (see fig 12).

The ovisac is white, elongated, 8mm. long by 25mm. broad, with sides nearly parallel, conspicuously fluted and with slight tranverse markings, apparently impressions of the hinder end of the body.



PULVINARIA PHAIÆ LULL.

The material of which the ovisac is composed is very close grained and felty, but so readily adhesive to any object that the slightest touch destroys the characteristic appearance of the structure. At the time of the formation of the ovisac a sparse covering of flocculent material makes its appearance on the dorsal surface of the scale, similar to that of certain other species, notably that described by Westwood (Gard. Chron., 1870, page 308), whose description of the ovisac also corresponds more or less closely to that of the present species; but as no technical description of the insect itself is added, there is no proof of the identity of *Pulvinaria phaiæ* and *P. floccifera.*

The EGG is minute, regularly oval, pale yellow in color, with no discernible sculpturings or markings thereupon. The eggs are numerous, but the number, together with the size of the ovisac, varies apparently with the abundance or scarcity of food.

The newly hatched LARVA is active, pale yellow in color, in form an elongated oval with comparatively few marginal spines. The anogenital plates reach quite to the margin of the insect and the anal setæ are strong and nearly one-third the length of the insect. All appendages are proportionately far larger than in the adult (see fig. 1). Antennæ are of six segments. Segment 3 is the longest, though about equal to 6; segments 4 and 5 are equal and next in length; segments 1 and 2 equal and shortest. Formula 3, 6 (4, 5) 1, 2. Three hairs are born on segment 3; the 4th bears one rather long hair, while 6 bears seven, of which the terminal one and one other are very long.

The legs are long and stout. The tibia is longer than the tarsus, which is, as Mr. Maskell says (Trans Royal Society, S. Australia, XI, p. 103), "an exceptional character in larvæ." He cites it as being true of *P.*

Flavicans, mask,' larva. Digitules are similar to those of the adult. The rostral loop is long, being over one-half the entire length of the insect.

The MALE test is 2.5 mm. long by 1 mm. broad, elongated oval in outline, with two notches, one on each side, in the anterior one-eighth; two similar notches lie about two-sevenths of the distance from the posterior end, and one deep anal notch or cleft lies terminally in the median line. Color hyaline, the semi-transparent pupa showing through the test with greater or less distinctness. A row of ten oval, lustrous, pellucid markings lie along the medium line of the test. Two main carinæ, arising from the anterior marginal notches, approach to within about .3 mm. of each other, then run nearly parallel until nearly opposite the posterior lateral notches whence they converge to form a single line ending in the posterior median notch. Two transverse carinæ connect the main ones, one about .5 mm. from the anterior end and one about .75 mm. from the posterior end. Other carinæ describe reversed curves connecting each a posterior lateral notch with the main carina of its own side just behind the posterier transverse keel. (See fig. 2.)

The carinæ are lustrous in appearance like the oval markings before mentioned.

The male pupa may be seen within the test described. It is about two-thirds the length of the test. The head with its two dorsal eyes is distinctly visible. The wing pads are already conspicuous and the two tubercles which later give rise to the anal filaments are also seen flanking the partially developed stylus.

The **MALE** of this species was rather plentiful in May, 1897, when the form was first discovered ; but, while male tests have been found since, no perfect males have been secured since. A drawing was made, at the time mentioned, of a living male; but it was done without a *camera lucida*, and, as the creature was somewhat active, the result was unsatisfactory. Mounted specimens, both in glycerine and Canada balsam, became so distorted as to make either a drawing or an adequate description well-nigh impossible. Thus it was thought best to publish a meagre description of the sex rather than await the reappearance of so evanescent a creature as a male Pulvinarian.

The male is a delicate two-winged fly, about 1.5 mm. long and about 3 mm. in alar expanse; breadth of thorax about .5 mm. The anal setæ were nearly equal to the trunk in length, though, as these are merely waxy secretions and are continuously growing, the length undoubtedly varies in different individuals. The color was the terneral color, that of the newly emerged individual, which changes somewhat as the insect flies about. General ground color pale brown, darker on the thorax, with a dark brown band crossing the mesothorax at the level of the wings. The legs and antennæ pale yellow ; wings hyaline, with a rose-colored basal portion ; anal filaments white. The head is free, rounded, but with the fronti produced into an obtuse angle. The dorsal and ventral eyes are conspicuous, equal in size and very dark brown in color ; the ocelli are not discernible in the mounted specimen. The antennæ are long, slender and pilous, and of ten segments (See fig. 9.) Segment 4 is much the longest; segments 6, 5 and 10 subequal and next in size, being about three-fifths the length of segment 4. Next in length is segment 7 ; next 8 ; next 1 and 3, nearly equal; next segment 9 ; while 2, nearly spherical in shape, is the shortest of all. The antennæ in general compare closely with those of the male *P. innumerabilis* (see above), except that no knobbed hairs were observed on the distal segment. In fact, except for some characters *not* observed in my species, and hence possibly overlooked, the whole description of *P. innumerabilis* ♂ tallies fairly well with that under consideration, thus hinting that the true distinguishing specific characters are yet to be found. This, however, is not true of the female, nor yet of the male test.

As to the distribution : The insect was found on no other plants than the two species of *Phaius* mentioned. Thus there is reason to believe that it was imported with one or the other of the original plants, which are natives of Japan, and this would render the insect palæarctic in origin; but, as is sometimes the case with plant house-insects, the subject is clouded in considerable obscurity.

The plants seem able to thrive even when infested with considerable numbers of the scale, though one plant has died presumably as a result of infestation, though scales of another sort, which were present, doubtless aided in bringing about the result.

One curious fact was noted, that while the female was as a rule sedentary, at the same time up to the period of gestation she was capable of free locomotion and was very apt to seek for pastures new, especially if feeding was poor; not always, however, with very great success, as, for instance, when an infested leaf was pinned up against the window casing numbers of the insects left the leaf and actually made their ovisacs on the wood work itself, sometimes at a distance of several inches from the leaf. The ovisacs were appreciably smaller than where the insects remained at rest, however, showing that the secreting power of the glands is limited where fresh food is not obtainable. I further noticed that as the ovisac grew in size the insect was pushed forward, the ovisac itself remaining stationary.

Natural enemies: I bred a parasite from the scale, which Dr. Howard kindly identified as *Coccophagus lecanii* Fitch, a form which infests many of our local *Coccidæ*.

An artificial remedy was discovered to be very effectual through an oversight. The student in charge of the insectary green-houses wherein the insect was being bred was instructed to fumigate the houses with tobacco smoke, which he did without removing the *Phaius* plants, to the utter destruction of every specimen of the scale.

DESCRIPTION OF PLATE

Figure 1, Newly hatched larva.
Figure 2, Male pupa within test.
Figure 3. Female, nearly mature.
Figure 4, Female with fully formed ovisac.
Figure 7, Female antenna, type "A."
Figure 8, Female antenna, type "B."
Figure 9, Male antenna.
Figure 10, Fore leg of female, 10a, claw enlarged
Figure 11, Anogenital structure of female.
Figure 12, Stigma and stigmatal glands and spines, "a" equals "a" enlarged.
Figure 13, Female mouth.
14, Margin of female scale showing branched spines.

CREMASTOCHILUS LEUCOSTICTUS BURM—MALE AND FEMALE.

By Chas. Liebeck, Philadelphia, Pa.

[See Plate VI, Figs. 13 and 14.]

Two specimens, male and female, of this very rare species were received by courtesy of R. J. Weith, of Elkhart, Ind., that "were taken in Clarendon county, South Carolina, about 60 miles from Charleston, near the Santee River, sometime between the 1 and 9 of August, 1896. The specimens were flying together in a broom-grass clearing near a swamp."

The male shows the most curious departure from the general appearance of the other species of *Cremastochilus*, the upper surface of thorax and elytron being covered with a dense pubescence, the base of head, two-thirds of thorax bordering side margins, and entire margin on upper surface of elytron being yellowish white (as shown in plate) the pubescence of the remaining portions being a dense, velvety black, though not so heavy as the whitish.

The female is entirely devoid of pubescence, black, shining.

The first three ventral segments of male are strongly, longitudinally depressed at middle; the anterior tibiæ, though bidentate externally as in the female, the upper tooth is inconspicuous, the apical much recurved, not so long nor acute as in the female; the apex strongly notched at middle, inner edge of emargination resulting in short, acute tooth; inner, apical edge of tibiæ being abruptly incurved from midway between upper and apical teeth.

In the female the apex is obliquely straight to point of apical tooth, though very feebly sinuate.

The punctuation of head, thorax and pygidium of male is sparser and finer than in the female, that of scutellum much more numerous and finer, the elytron being about equal in both sexes.

It seems rather surprising that no record is given of the male to date, Burmeister, Handb. III. p. 677, 1842, basing his description on a female specimen, and Dr. Horn, Proc. Am. Philosophical Society, 1879, Vol. xviii, redescribing the species from a unique female taken in Maryland by Mr. Ulke.

LIST OF ACULEATE HYMENOPTERA,

Taken at Fedor, Lee County, Tex. By G. BIRKMAN.

By far the greater number of the following species were determined by Mr. William J. Fox.

Mutillidæ.—*Mutilla montivaga, tisiphone, californica, occidentalis, comanche, orcus, gorgon, connectens, brazoria, scævola, waco, venifica, mollissima, vesta, simillima, caneo, 4-guttata, 4-guttata* var. *electra, cypris, mutata ,balteola, præclara, dubitata, grandiceps, pygmæa, euterpe, auripilis, pensylvanica, castor, fulvohirta, zelaya, fenestrata, canella, macra, bexar, promethea, hexagona.* **Scoliidæ.**—*Tiphia inornata; Paratiphia albilabris; Myzine fuliginosa, hamata, dubiosa, 6-cincta, fumipennis; Scolia nobilitata; Elis plumipes, 4-maculata.* **Sapygidæ.**—*Sapyga centrata.* **Pompilidæ.**—*Pompilus philadelphicus, maurus, tenebrosus, fuscipennis, tropicus, interruptus, ferrugineus, marginatus, argenteus, cylindricus, cinctipes, algidus, americanus; Priocnemis flamipennis, fulvicornis, marginatus; Agenia belfragei, mellipes, accepta; Notocyphus dorsalis; Parapompilus vicinus; Aporus fasciatus; Ceropales bipunctata, fulvipes; Mygnimia ustulata; Pepsis formosa, luteicornis.* **Sphegidæ.**—*Sphex ichneumonea, pennsylvanicus, texana, lauta, bel, fragei, tibialis, atrata, thormæ, abdominalis; Pelopoeus cementarius; Chalybion cæruleum, texanum; Ammophila grossa, gryphus, pictipennis, vulgaris; Chlorion cærnleum.* **Larridæ.**—*Tachytes aurulentus, elongatus, validus, breviventris, rufofasciatus, fulviventris, texanus, pepticus, abdominalis, obscurus, sericatus; Tachysphex punctifrons, terminata, montana, fusus; Notogonia argentata; Ancistromma consimilis.* **Bembicidæ.**—*Sphecius speciosus, Megastizus brevipennis, Bembecinus neglectus, Stizus unicinctus, Bembex nubilipennis, texana; Monedula carolina, pictifrous, ventralis, speciosa; Bembidula fodiens, ventralis, capnoptera, insidiatrix.* **Nyssonidæ.**—*Gorytes moneduloides, phaleratus, phaleratus* var. *rufoluteus, propinquus; Hoplisus bollii, Alyson texanus, Nysson texanus.* **Philanthidæ.**—*Philanthus ventilabris, punetatus, dubiis, politus; Cerceris mimica, gnara, fumipennis, venator, dufourii, bicornuta, fasciola, clypeata, compacta, kennicottii, rufinoda, finitima ; Eucerceris.* **Mimesidæ.**—*Psen tibialis.* **Crabronidæ.**—*Trytoxylon albitarse, politum, clavatum, bidentatum, texense, fastigium; Crabro 10-maculatus, rufifemur, scaber, cognatus, flaviclypeus, propinquus; Entomognathus texanus* var.; *Oxybelus cornutus, subulatus, 4-notatus* var. *montanus, packardi* var. *texana, emarginatus.* **Eumenidæ.**—*Zethus spinosus; Eumenes fraternus, americanus* (*belfragei*), *bollii, Monobia quadridens; Odynerus dorsalis, fusus, clusinus, hidalgi, ductus, evectus, annulatus, manifestus, arvensis, foraminatus, campestris, firmus; anormis, fundatus, colon, fulvipes, austrinus, pedestris, taos, capra, tigris, delicatus* var., *unifasciatus, quadrisectus, Pterochilus 5 fasciatus.* **Vespidæ.**—*Polistes incertus, minor, annularis, perplexus, variatus, americanus, texanus, fuscatus* det Schulth; *Vespa carolina, germanica, cuneata.* **Andremidæ** and **Apidæ.**— *Colletes americanus, compactus?* det. Friese; *Prosopis varifrons, affinis; Sphecodes* (near *mandibularis*); *Halictus tegularis, coactus, ligatus, pectoralis, bardus, armaticeps* det. Friese; *Augochlora pura, sumptuosa, humeralis; Agapostemon nigricornis, texana, æruginosa; Andrena brunniventris, belfragei, miserabilis? Protandrena* sp. det. Friese; *Nomia nortonii, foxii, birkmannii* Friese MSS.; *Calliopsis ornatipes, rhodophilus* det. Friese, *abdominalis; Perdita*, 4 to 5 undet. sp.; *Nomada texana, belfragei, bisignata, electra? Epeolus occidentalis, texanus, remigatus; Epeolus lunatus, scutellaris; Phileremus*, sp.; *Melecta interrupta; Stelis costalis; Cœlioxys insita, texana; Osmia texana, bucconis?* det. Friese, *chalybea*, det. Friese, *subfasciata; Heriades variolosns, denticulatus* det. Friese; *Andronicus*, sp.; *Alcidamea*, sp.; *Anthidium zebratum, concinnum; Lithurgus gibbosus, compressus; Megachile facunda, pruinosa, optiva, albitarsis, montivaga, latimana, fortis, exilis, pollicaris, pugnata, frigida* det. Friese, *inimica, brevis, perbrevis, comata; Ceratina strenua* det. Friese; *Mellissodes confusa* det. Friese, *menuacha, suffusa fimbriata, rustica* det. Friese, *afflicta. intorta, texana, intermedia? obliqua*, det. Friese, *comanche, atripes; Synhalonia albata; Synhalonia honesta; Podalirius smithii* det. Friese; *Anthophora texana, montana, abrupta; Xylocopa, micans, texana, virginica; Centris birkmanii* Friese; *Apathus variabilis, elatus; Bombus pennsylvanicus, scutellaris, americana.* **Addendum.**—*Exomalopsis*, sp. det. Friese.

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GEOGRAPHICAL DISTRIBUTION OF LIMENITIS WELL ILLUSTRATED.—In the Geographical and Geological Exhibition now being held at the new Science Museum Building in Springfield, Mass., is a curious map, the work of Miss Anna Dimmock, a grammar school girl of that city. This map illustrates the distribution of the two butterflies *Limenitis arthemis* and *L. ursula* in relation to their intermediate form *L. proserpina.* On the map of the United States and British North America, which is perhaps 10x18 inches in size, the area from which *L. arthemis* is known is indicated by oblique blue shading, and the area occupied by *L ursula* by yellow shading in the same direction. Where both species occur the yellow lines interlace with the blue ones, thus giving a mild greenish shade to that portion of the map. Where *L. proserpina* has been found is indicated by green shading lines at right angles to the other shading-lines. At one side of the map hangs a box with four specimens of *Limenitis*, grading from *L. arthemis* through *L. proserpina* to *L. ursula.*

At the other side of the map, which is entitled "A Study in Geographical Distribution," hangs a sheet with brief explanation of the facts concerning these butterflies, and a short statement of Mr Scudder's opinion that *L. proserpina* is a hybrid form of *L. arthemis* and *L. ursula*, and Mr. Edward's reasons for the view that *L. proserpina* is a variety of *L. arthemis*. Miss Dimmock has not only indicated the distribution of the species as given in Scudder's "Butterflies of the Eastern United States," published in 1888, but has carefully compiled, from the various entomological periodicals, later recorded captures, so that her map is a graphic presentation of the hybrid-variety question in regard to *L. proserpina*, brought down to 1899. It is unnecessary to add that this map was not a part of its author's school work in natural science.

FREDERIC KNAB, Chicopee, Mass., June 30, 1899.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfullyreceive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer for each number three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., OCTOBER, 1899.

EDITORIAL.

"HARRISBURG, PA., August 17.—Senator "Jim" Mitchell's son-in-law, Benjamin F. McCartney, has landed in the place of Economic Zoologist, and will take his place on September 1st. McCartney's qualifications for this scientific position consist in his having clerked in Senator Mitchell's grocery store in Jefferson county and having known coon pelts when the natives traded them for brown sugar."

The above is a clipping from *The Philadelphia Record*, and as far as we know is literally true and gives a good idea of the status of scientific work in Pennsylvania as far as public positions are concerned. This State appears to have the distinction of being politically the most corrupt of any in the Union. The Economic Zoologist of Pennsylvania gets a salary of $2,500 and has an assistant at $1,500. It can be safely said that the return the people get from this department (Economic Zoology) may be computed in copper pennies. The damage done, except by insects, is immaterial, and an economic zoologist who only knows coon skins could hardly be expected to advise farmers and others in regard to injurious insects.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

THE Directory of American Entomologists is progressing rapidly, but there are still a number of persons who have thus far failed to send in their names, etc. We feel that those who carelessly neglect to send their names will greatly regret it when the Directory appears. Persons desiring to insert advertisements on the cover sheets will communicate with Mr. E. T. Cresson, Box 248, Philadelphia.

ON A REMARKABLE USE OF ANTS IN ASIA MINOR. Under this heading we quoted, in the NEWS for October, 1897, page 200-1, an account given by R. M. Middleton of ants being used to hold together the edges of incised wounds by means of their strongly hooked and sharp mandibles. In the recently published proceedings of the Linnean Society of London, 110th session, page 2, the name of the species in question is given by Mr. Middleton as *Cataglyphus viatica* Fabr.

DR. HERMAN STRECKER has recommenced scientific literary work and has recently published additions to his well known Lepidoptera Rhopaloceres and Heteroceres. Supplement No. 2, was noticed in the September literature of the NEWS. This paper contains descriptions of fifty new species of moths and butterflies Of course such things as the insects described must be made known to science, but the work would be far more valuable if the species were figured as in the doctor's previous numbers of the work. He is at present engaged in writing a descriptive list of the types in his collection, and also has ready for the press an index to the species mentioned in Kirby's Catalogue of Lepidoptera Heterocera Vol. 1. These publications may be had from the author.

A VERY RARE INSECT FOUND IN BOONE COUNTY YESTERDAY.—A very rare insect was found in Boone county yesterday, says the Belvidere, Ill., *Northwesterner*, August 17, 1899. It was found out in the country and presented to C. Fred Lewis, of this city, who in turn presented it to Superintendent A. J. Snyder, of the North Schools, who will add it to his large collection of insects.

The little pink creature is certainly an oddity. It is an Albino that out-Albinos anything often seen. Superintendent Snyder says he only knows of two other specimens of this kind being found in this country. One was found by him at Evanston, this State, and the other was captured at Wood's Holl, Mass., the great biological center.

Entomological Literature,

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in HEAVY-FACED TYPE refer to the journals, as numbered in the following list, in which the papers are published; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

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4. The Canadian Entomologist, London, Ont., '99.—**5.** Psyche, Cambridge, Mass., September, '99.—**8.** The Entomologist's Monthly Magazine, London, '99.—**9.** The Entomologist, London, '99.—**11.** The Annals and Magazine of Natural History, London, August, '99.—**14.** Proceedings of the Zoological Society of London, '99, part ii, August 1.—**21.** The Entomologist's Record, London, August 1, '99.—**22.** Zoologischer Anzeiger, Leipsic, '99.—**32** Bulletins du Muséum d'Histoire Naturelle, Paris, '99.—**37.** Le Naturaliste Canadien, Chicoutimi, Quebec, '99.—**38.** Wiener Entomologische Zeitung, xviii, 7, July 31, '99.—**42.** Journal of the Linnean Society, Zoology, London, No. 172 Dec. 15, '98, No. 173 April 1, '99.—**60 a.** Anales, **60 c.** Comunicaciones, Museo Nacional de Buenos Aires.—**84** Insekten Börse, Leipsic, '99.—**87.** Revue Scientifique, Paris, '99.—**89.** Zoologische Jahrbücher, Abtheilung für Systematik, xii, 3, Jena, August 12, '99.

The General Subject.—Anon. W. M. Wheeler's anemotropism in insects, **87**, August 12.—Berg, C. Substitutions of generic names, iii, **60 c**, i, 3, May, '99.—Carret, A. M. F. Guillebeau and his entomological works (cont.), L'Echange Revue Linneenne Lyon, August, '99.—Distant, W. L. Biological suggestions: mimicry (cont.), Zoologist, London, July 15, August 15, '99.—Frings, C. Experiments with low temperature in 1898, Societas Entomologica, Zürich-Hottingen, August 1, '99.—Harrington, W. H. Extra limital insects found at Ottawa, Ottawa Naturalist, August, '99.—Heymons, R. The morphological structure of the insect abdomen: a critical review of the most important results of research in anatomical and embryological fields, Zoologisches Centralblatt, Leipsic, August 1, '99.—[Huard, V.] Tragi-comic entomology in our large newspapers, **37**, July.—Karl, P. A. On the fauna of the caves of the Moravian Devonian Limestone, **22**, July 24, 31.—Poulton, E. B. Natural selection the cause of mimetic resemblance and common warning colors, 5 pls., **42**, 172.—Robertson, C. Flowers and insects, xix, Botanical Gazette, xxviii, 1. Chicago, August, '99.—[Scudder, S. H.] Manuscript notes by the late T. W. Harris on Say's insects and papers, i, **5**.—Thomson, A. Report on the insect-house for 1898 [Zoological Gardens, London], **14**.—Thon, C. Some observations on the fauna which dwells in frogs' spawn, Verhandlungen, Zoologisch-botanischen Gesellschaft in Wien, xlix, 7, August 4, '99.

Economic Entomology.—Anon. A new case of contagion by an insect [*Melanolestes picipes*], 87, August 26.—Bastianelli, G., Bignami, A. and Grassi, B. How one takes malarial fever, Transmission of malaria by definite insects, Rearing of the malarial parasite of man in *Anopheles claviger* Fabr. (syn, *A maculipennis* Meig.), Further researches on the life-history of the human malarial parasite in the body of the mosquito [four memoirs translated from Italian originals into German], Moleschotts' Untersuchungen zur Naturlehre des Menschen und der Thiere, xvi, 5 and 6, Giessen, '99—Cockerell, T. D. A. Coccid pests on sugar cane, Bulletin of Miscellaneous Information, Nos. 145-146, Royal Gardens, Kew, Jan.-Feb., '99. Rec'd August 5. —Davis, T. W. The mosquito as a vehicle of malaria, New York Medical Journal, August 19, '99 Fletcher, J Report of the entomologist and botanist, figs , Canada Department of Agriculture, Central Experimental Farm, Annual Report for 1898 Ottawa, '99.—Fuller, C. Insect friends and foes: lady birds versus bugs, figs., Agricultural Journal, Cape Town, July 20, '99.—Green, E E. Observations on *Aspidiotus lataniæ* Sign, figs ,8, August.—Kirkland, A. H Eleventh annual meeting of the Association of Economic Entomologists. Columbus, Ohio, August 18 and 19, 1899, Science, New York, Sept. 8, '99.—Lesne, P. Extracts from a report addressed by M. Wisser, inspector of plantations of the Nieuwe Afrikaansche Handels Vennootschap, to M. Ch. Chalot, Director of the experimental garden at Libreville, on various insects injurious to the coffee-trees in the region of Loango and in that of the Kouilou, figs., 32, No. 3.—Pearson, L. and Warren, B. H. Diseases and Enemies of Poultry. Published by Authority of the Legislature [of Pennsylvania]. Clarence M Busch, State Printer of Pennsylvania, 1897. Plimmer, H. G., and Bradford, J. R. A preliminary note on the morphology and distribution of the organism found in the tsetse fly disease. Proceedings, Royal Society, No. 418, London. August 31, '99.—Reh. L. News of the American scale insects. Naturwissenschaftliche Wochenschrift, Berlin, August 13, '99.—Wilcox, E. V. Abstracts of recent publications, Experiment Station Record. x, 11, Washington, '99.

Arachnida.—Behr. H. H. and Marlatt, C. L. A Californian tick, 4, August—Pickard-Cambridge, F. O. On some spiders from Chili and Peru collected by Dr. Plate of Berlin, 1 pl., 42, 173. Pickard-Cambridge, O. On some new species of exotic Araneidea. 2 pls, 14; On some arctic spiders collected during the Jackson-Harmsworth Polar Expedition to the Franz Joseph Archipelago, 1 pl., 42, 172.—Rowbotham, F. J, Maternal devotion of spiders, Nature, London, August 31, '99.—Seurat, L. G. Biological Relations between *Epeira labyrinthea* McCook and *Pimpla mexicana* Cameron, Memorias y Revista, Sociedad Cientifica "Antonio Alzate," xii, 7-8, Mexico, '99.

Myriopoda.—Attems, G. New facts on palæarctic Myriapods, 3 pls., **89**.—Verhœff, C. Contributions to knowledge of palæarctic Myriopods, viii. On the comparative morphology, phylogeny and classification of groups and of species of the Chordeumidæ, figs., 5 pls., Archiv für Naturgeschichte, lxv, i, 2, Berlin, June, '99.

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Neuroptera.—McLachlan, R. Notes on certain palæarctic, species of the genus *Hemerobius*, No. 4, figs., **8**, August; On the voluntary submergence of the female of *Enallagma cyathigerun*, **8**, Sept.—Needham, J. G. *Ophiogomphus*, **4**, Sept.—Tutt, J. W. Migration and dispersal of insects: Odonata, **21**.

Hemiptera.—Baker, C. F. On *Alebra* and related genera, **5**.—Cockerell, T. D. A. A new *Dactylopius* (fam. Coccidæ) from Arizona, **4**, Sept.—Distant, W. L. Some apparently undescribed Neotropical Homoptera,* **11**.—Hueber, T. Synopsis of the German "blindwanzen" (Hemiptera heteroptera, fam. Capsidæ), pt. iv. Jahreshefte, Vereins für vaterlandische Naturkunde in Württemberg, lv, Stuttgart, '99.—King, G. B. Contributions to the knowledge of Massachusetts Coccidæ, iii, iv, **4**, Aug, Sept.—Kirkaldy, G. W. Notes on aquatic Rhynchota,* **9**, August; A Guide to the study of British Rhynchota, **9**, August; On the nomenclature of the Rhynchota, i, **9**, Sept.—Marlatt, C. L. *Aspidiotus convexus*, Comst., a correction, **4**, August.—Martin, J. Catalogue of the Hemiptera Platyspinidæ of the collections of the Museum of Natural History of Paris, **32**, No. 5—Montandon, A. L. Hemiptera-Heteroptera: three new species of the genus *Zaitha* Am. et Serv., from the collections of the Museum of Paris, **32**, No. 4.

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DOINGS OF SOCIETIES.

At the meeting of the Feldman Collecting Social held June 21st at the residence of Mr. H. W. Wenzel, 1523 South Thirteenth street, Philadelphia, atwelve members were present.

The death of Dr. H. G. Griffith, a member, was announced.

Prof. Smith exhibited a hermaphroditic specimen of *Carneades* sp., received from Washington. The antennæ, wings and thorax show male characteristics on one side of the body, whereas on the opposite side they are female. Both the claspers of the male and ovipositor of the female are present. He further stated that dragon flies had been reported to be very destructive to honey bees in Colorado, being especially partial to queen bees. The present unusual abundance of Odonata was mentioned, especially *Æschna heros.*

Mr. Seiss also remarked on the abundance of this species.

Mr. H. Wenzel recorded the capture of *Siphcn rclustus* at Atco N. J. It was found abundantly in the larval and pupal state in Sphagnum moss. He also exhibited specimens of *Tmesiphorus costalis*, new to this region, and *Cedius Ziegleri* and *Adranes coccus*, both quite rare, all of which he had taken at Clementon, N. J.

Prof. Smith read a newspaper clipping regarding the occurrence of fire flies in extraordinary abundance. He pointed out that at this early season the fire fly is rather scarce, and stated the article was no doubt greatly exaggerated as is most newspaper entomology.

The following resolution was unanimously adopted:

Whereas, death has recently claimed our fellow member, Dr. Horace Greeley Griffith. Be it

Resolved, by the Feldman Collecting Social at its regular meeting held June 21, 1899, that we express our sincere regret and grief at this serious loss. We honored and esteemed our fellow member for his ability as a collector and student, for his social qualities and for his many congenial traits that endeared him to us as a companion and fellow worker. His loss is a serious one to us and to our science, and we tender our sincere condolence to the members of his family whose loss is as great as our own.

Resolved, further that a copy of this minute be sent to the family of the deceased. William J. Fox, Secretary.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. X. NOVEMBER, 1899. No. 9.

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NEW SPECIES OF ANDRENA FROM KANSAS.

BY T. D. A. COCKERELL, New Mexico Agricultural College.

Andrena kansensis, n. sp.—♂. Baldwin, Kansas, April. (*J. C. Bridwell.*) Two.

Andrena bridwelli, n. sp.—♂. Baldwin, Kansas, April. (*Bridwell.*) Two. Also one from Hartford, Connecticut, April 30, 1893. (*S. N. Dunning.*) I formerly thought this a variety of *A. cressoni.*

Andrena cragini, n. sp.—♂. Baldwin, Kansas, August. (*Bridwell.*) One. Named after Prof. F. W. Cragin, who published a list of Hymenoptera, which he collected in Barber Co., Kansas.

These species will be best identified by means of the following table:

Male Andrenæ of North America, with the abdomen not ferruginous, and the clypeus and lateral face-marks yellow or white.

Abdomen of the tesselate and hardly or not punctured type 1.

Abdomen distinctly punctured . . . . 4.

1. Very small, not over 6 millim. long, face marks whitish . . . . *personata* Rob.

Larger, between 7 and 9 millim., face-marks yellow or yellowish . . . . 2.

2. Late summer and autumn species, lateral face-marks only a spot . . . . 3.
Vernal species, lateral face-marks triangular. Length about 8½ millilim.; pubescence dull white, long and quite abundant, on abdomen thin but conspicuous, not forming bands; only two submarginal cells; sixth ventral abdominal segment with a projecting point on each side . . . . . . (*Parandrena*) *andrenoides* Cress.

3. Thorax with sparse, feeble punctures, its pubescence dirty white; sixth ventral segment of abdomen normal. . . . . *asteris* Rob.
Thorax minutely tessellate, with very strong, quite numerous punctures, its pubescence pale ferruginous; sixth ventral segment of abdomen with the apical margin broadly reflexed. Length 8 millim., black, the pubescence pale ferruginous, or reddish-ochreous; facial quadrangle about square; clypeus with strong, well-separated punctures; front very densely striate-punctate; flagellum, except the first joint, dull ferruginous beneath; clypeus bright lemon-yellow, with two conspicuous black spots; lateral marks reduced to small round yellow spots; process of labrum broad, truncate, with a shallow emargination; enclosure of metathorax granular, hardly defined; tegulæ shining brown; wings dusky, stigma and nervures ferruginous; tarsi dark, but inclined to ferruginous; abdomen rather shiny, more distinctly punctate than usual in the group; hind margins of the second and following segments with pale ochreous hair-bands . . . . *cragini* Ckll., n. sp.

4. Clypeus only partly yellow; autumnal species . . 5.
Clypeus light, except the usual dots; vernal species 6.

5. Sides of clypeus black, wings dusky at apex, first two abdominal segments with orange fulvous bands. *aliciarum* Ckll.
Anterior margin of clypeus broadly black, wings clear. *pulchella* Rob.

6. Face-markings lemon-yellow . . . . 7.
Face-markings cream-color . . . . 9.

7. Lateral face-marks in the form of a square, with the lower inner angle cut off by the clypeus, the upper side straight and about level with the lower edge of the antennal sockets, forming a right angle with the orbital margin . . . . 8.
Lateral face-marks forming a nearly equilateral triangle, the upper angle about level with the top of the clypeus; pubescence dull white; flagellum dark; process of labrum truncate, but the edge concave; stigma and nervures bright orange-fulvous; apex of abdomen beneath a little brush of dark hair, present also in *cressoni*. All else as in *cressoni*. . . . *bridwelli* Ckll., n. sp.

. Pubescence dull white . . . . . . *cressoni* Rob.
Pubescence orange-fulvous; all the tarsi, and the hind tibiæ, except a suffused spot within, bright ferruginous; femora and first four tibiæ black; process of labrum with a concave truncation; antennæ dark; sometimes a small yellow supraclypeal patch; wings a little dusky at tips, stigma and nervures bright orange fulvous; other characters as in *cressoni* . *kansensis*, Ckll., n. sp.

9. Length 12 millim.; flies in June . . *rudbeckiæ*, Rob.
Not over 8 millim.; fly in March and April . . 10.

10. Larger; flagellum dark . *capricornis* Casad and Ckll.
Smaller (6 millim.), flagellum ferruginous beneath.
primulifrons Casad.

Mr. Bridwell also sent an example of *Calliopsis verbenæ* Ckll. and Porter, ined., collected at Baldwin, Kansas, in July. This species, the type locality of which is Las Vegas, N. M., is allied to *C. andreniformis*, but differs in the face-marks (♀) as follows: Clypeus strongly but not closely punctured, shining, black, with the anterior margin broadly white; no supraclypeal mark; lateral white marks triangular, with the inner angle cut off, the upper angle not reaching the level of the antennæ; labrum with a transverse light mark,

THE "ART" OF COLLECTING CATOCALA.

By H. Schwarz, St. Louis, Mo.

I suppose almost every collector of Lepidoptera has more or less made the acquaintance of collecting *Catocala*, and found it to be a most vexing task, owing to the difficulties involved in the undertaking.

I have tried various methods. One is that of spearing them with a bow and arrow, only that I used the weapon on a small scale. It is made of a willow twig about eight inches long and three-fourths of an inch in diameter. This is hollowed out and a stick to fit the inside (one inch longer than the hollow one) is supplied. Three needles are then inserted into one end of the stick in a triangular form and so that their pointed ends are outward. A stout wire about three inches long is then fastened about three and one-half inches from one end of the hollow piece in such a manner that about one inch of wire will extend from each side of the wood. A medium-sized rubber is then fastened—one end to each of the extending wires—so that it will lay over the hollow piece without being expanded. Now insert the stick (the one holding the needles) into the hollow one and your gun is ready for action. This instrument has a great drawback, owing to the experience needed to operate it. A novice will invariably either damage the specimen, so as to render it unfit for the cabinet, or miss his would-be captive altogether; probably the latter.

Another method is "the cyanide bottle." This is very simple, but more profitable than the preceding. The specimen must be approached with extreme care and the bottle placed over it with great dexterity. The last but most satisfactory method is collecting with the net. A little practice will enable the collector to secure his prize almost every time a hit is made; at least such was my experience.

As it may also be of interest to beginners in the "art" of collecting *Catocala* to know how this is done to the best advantage, I will here give a description. During the months of June, July and August the *Catocala*-hunter of this section will find his game in dark, moist places, heavily timbered with oak, elm and other rough-barked trees. Owing to the similar coloration of the forewings (primaries) in the genus

Catocala to that of the bark of most trees they are not easily detected. Often a novice will be doomed to disappointment in seeing what he supposed to be a fine specimen, a piece of projected bark, or the like. Again he will be misled by mistaking what looks from a distance like a bit of tree-moss, bark or one of the many things that look so similar, for a splendid specimen of that large genus, *Catocala*. In short, "experince teaches," and never have these words held truer than in this very instance.

When a place like the one described is found the collector must exercise great care in moving among the trees. Always approach the tree you are about to examine from the shady side. Do not get closer than is necessary in order to detect any specimen that may be hidden in the furrows of the bark. When having spied a specimen approach it very slowly and move as little foliage as possible. When the rim of the net will just about touch the object on which your Noctuid is situated place it very cautiously about three or four inches from the insect, *with part of net-rim touching tree*, of course with open side of net toward the moth. Now, without waiting for the insect to fly, make a brisk dash toward it with your net, and (if you have been swift enough) the prize is yours, when it must be stopped from fluttering in the net at once. This is done by giving it no room to move about. Place your thumb and forefinger beneath the wings on thorax and give a smart squeeze, which will at once end its struggles to escape. Experience has taught me never to wait for the insect to fly, for nine times out of ten you will miss it.

To testify that net-collecting is a most satisfactory method I can do no better than state that on the 21st of June, this year, my brother and I captured forty-three specimens in two and one-half hours.

[NOTE.—We do not believe it is possible to collect *Catocalæ* in a perfect condition by means of a net, and there is no collector who would have rubbed specimens. The best way is to use *four* needles set in a handle, at right angles to each other and between one-eighth and one-fourth inch apart. The needles are thrust through the thorax and the specimens taken in this way are faultless. The next best way is to use a well-charged, wide-mouthed cyanide jar.—EDS.]

NATURE STUDIES.

The appended newspaper clippings describe the plan of work of an organization which was started in this place last spring, and the enclosed clippings, all from our local paper, give some idea of what we have accomplished. I send these to you, thinking that some of the readers of THE NEWS might like to try some such plan in other places. As a result of the organization here, the number of people very much interested in entomology has increased from one to seven.

Yours truly, W. R. HOWARD,
Belfast, Maine.

Those interested in nature studies met at the High School room last Monday evening and listened attentively to a talk on birds by Rev. A. A. Smith. Mr. Smith is a close observer of birds, their life and habits, and from a classification, in their common English names, written on the blackboards, and from specimens and pictures, talked interestingly for about an hour. The individual members of common families were taken separately and something of interest in regard to the name and habits was given. Mr W. R. Howard on "Moths and Butterflies," and Mr, Smith on "Bird Life," were very fortunate selections of speakers and subjects, and for next week Rev. J. M. Leighton on the "Early Spring Flowers" must of necessity be as interesting from his love and knowledge of them. While these gatherings are informal in some respects, they are creating a deeper interest in nature at the season of the year most favorable. Mr. Howard, as chairman of the special committee appointed at the first meeting, reported that the committee thought it advisable to form two associations. To form the Agassiz Chapter of the school children, and those out of school into an independent class not connected with the Chapters in any way, but to jointly enjoy the general talks.

A sensational article is going the rounds of the plate matter papers giving a fearful account of the work of a new and dangerous insect called the "strangling bug," from its habit of striking its victims in the neck. The description, illustration and scientific name (*Benacus griseus*), are those of a very common and harmless insect, commonly called the water boatman or electric light bug. It lives in the water, but is caught in July flying about electric street lights with the beetles and moths. One member of the Belfast Nature Club has six specimens caught this season, and the insect was so common that many were allowed to escape. This alleged terror belongs to the order *Hemiptera*. It is about two inches long, brown in color, with large gauzy wings, which fold closely upon the back. The hind legs are strong for swimming and it has

glassy beadlike eyes. It is handled in this vicinity as carelessly as the common June bug and no person has been hurt.

Last Monday those of the Nature Club who are interested in botany and entomology went on a buckboard ride to Herrick's bog in Northport. The day was beautiful, the company jolly and everything pleasant, with the exception of the tramp on the bog. That was "simply horrible." It was a lost opportunity for the most amateurish snap shot freak. The streams in a bog are not very good places for a seat, as two of the party realized. But then it was in the interest of science. "It was a great day for butterflies." A member of the Fourth ot July horribles committee improved some of the time in rehearsals. The doctor of the party disappeared and caused some uneasiness, but appeared just five minutes before the time fixed to start home and when some of the gentlemen had found courage to organize a rescue party. One of the ministers went on a foraging tramp ahead and caused just a few hoots to be sent up. Everything considered, it was a very decorous crowd. Two entirely new flowers were added to the general collection—a new *Gaylussacia* and a *corydalis*—while the individual herbariums were increased by some common specimens. A recent convert to entomology, who had formerly flocked with the ornithologists, showed that he was not entirely free from the spell of his first love by vainly attempting to capture a hen in a butterfly net. After having driven about a mile and a half on the way home, it was found that one of the ladies had left her umbrella behind, and a dignified city official gallantly sprinted back to get it, making the round trip in something less than five minutes. The next outing will be with Mrs. E S. Pitcher at the battery shore.

There was a small attendance at the meeting of the Nature Club, Friday evening, on account of several members having other engagements. The roll-call showed that a large majority of the members prefer the study of botany. The meeting adjourned to Monday evening.

At the adjourned meeting Monday evening Rev. J. M. Leighton was chosen vice president and John R Dunton treasurer, this completing the organization. The dues were fixed at five cents per month. It was voted to hold the regular meetings the second Monday evening of each month. Methods of work, etc., were discussed, and arrangements will be made for field work by the classes at once. The executive committee state, for the benefit of interested parties who have not yet joined. that the only requisites of membership are signing the constitution and paying the dues. Members may act their own pleasure or convenience as to the amount or nature of their studies Most of the members will do individual field work, as many have done in the past, and in addition there will be class work and field work by small parties. Some members collect or make observations of whatever they see in any branch of natural history that interests them, while perhaps they are specially studying one branch. The outlook for the club is highly encouraging, as the members are all enthusiastic, and others, who are equally interested, expect to join at the next meeting.

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THE PSOCIDS OF AN OLD SNAKE-FENCE.

By NATHAN BANKS.

One evening in the later part of August, while engaged in the occupation of wheeling the baby, I noticed on her dress a small black insect. The ever ready empty vial was brought into service; and, by the aid of a glass, I saw that the insect was a black *Psocid*, quite new to me. Several black *Psocids* I had taken, but all with a paler area in the wings ; in this one there was no such pale space. In a few moments another specimen was taken in a similar position. By the road-side were growing trees, cherry, wild cherry and maple, and I surmised that on the trunk of one of these the *Psocid* would be found in numbers. Early next evening I looked but saw none, so began vigorously beating the shrubbery ; but no black *Psocid*. While contemplating the situation I saw a specimen on the sleeve of my outing shirt. Somewhere around here they are, that's certain; but trunk-gazing and bush-beating brought no reward. In a few days came a holiday, and at once I went to explore the region of the black *Psocid*. Near the row of trees commences an old snake or worm-fence, running back for some distance. On this, I thought, might be a *Psocid*. Sure enough ; but a pale-winged one! Lots of them, eggs, nymphs and adults. It seemed at first to be *Psocus quietus;* but, on examination, I saw it was different and agreed with specimens of *Psocus perplexus* Walsh. After taking a few of these I saw a few specimens plainly larger, much like *P. striatus,* but less marked. These turned out to be *Psocus purus* Walsh. Both of these I thought "good finds," and I laid in a supply of them ; but no sign of a black *Psocid*. In the afternoon I started to explore the entire length of that fence. I had gone but a short distance when I saw, on one of the lower rails, a *dead* black *Psocus*, the one I was looking for. Examination of all the rails above showed only the two pale species. The rails were old and full of cracks and crevices. For some unknown reason I pulled off a partly loose piece, and there, on the under side, were four black *Psocids*, sitting, as happy as could be. "That," I said, "is it; they are *inside* of the rails." Piece after piece I pulled off and found plenty of the black species. Finally, fearing the farmer's wrath, for the partial destruction of his fence, I hurried away to my room.

While hunting for this species I came across a few specimens of that widespread but rarely seen little *Psocid, Amphientomum hageni* Pack. This made four species of *Psocidæ* from that old snake-fence—a very good showing.

Psocus perplexus Walsh, the most common of all, is a pale-winged species, living in colonies on the outside of the rails. There egg masses were common and contained about twenty eggs on the average. Nymphs and adults were grazing together on the under surface of the rails. The nymphs transform to adults in the morning, clinging to the under side of a rail; the soft white wings drooping while expanding. The adults are very pale at first, but in day or so get the proper colors and are then quite pretty. They will not fly readily, but run when disturbed.

Psocus purus Walsh. Larger and paler than the preceding; no markings on wings, except a black dot on posterior margin. These are less common and more scattered than *P. perplexus*, but have the same habits.

Psocus, n. sp. Black; the veins dotted with white. Found in groups of from three to six beneath loose pieces of the rails. They are not easily disturbed and do not run quickly. They evidently fly at twilight, for pairing and migration, and are then attracted to white surfaces. The nymph was not found.

Amphientomum hageni Pack. This hides in a crack or under a piece of lichen. It has much resemblance to a *Tineid* moth. It does not take readily to flight, but runs from one crack to another. The nymphs, contrary to the usual rule in *Psocidæ*, is quite flat, and looks much like one of the bird-lice.

THE DIGGER WASP.

(*From Hartford (Ct.) Times, September 21, 1899.*)

It appears that there are other insects besides the ant that burrow in soils composed of a light sandy loams generally selecting a sidewalk flagging, or an old stump, under which they carry on their burrowing—leaving, as our correspondent said, little heaps of the soil to show their industry. The query of our correspondent (in Tuesday's *Times*) was answered that the insect was the ant. Now the ant does throw up such little sand-heaps as those mentioned by our correspondent; but so does the bigger insect that makes the little mounds he speaks of. This larger insect is a species of fossorial wasp—commonly called the Digger Wasp, and which was described two years ago by *The Times*. These formidable looking wasps are useful as destroyers of grasshoppers. It is an interesting part of Nature's great system of checks and balances by which an equilibrium is maintained, thus preventing the undue increase of any one species, whether of insects or creatures. An observer a few days since found a female Digger Wasp filling her nest with grasshoppers, to serve as food for the larvæ until they are developed far enough to go through with their transformations. The wasp here spoken of does not kill the insects with her sting, but paralyzes them, so that they will remain good food for the larvæ. Some spiders do the same thing. The Digger Wasp is closely related to the "mud dauber" wasps, which make nests of clay in barns, sheds, garrets, etc., and we believe also paralyze the insects they store up for their progeny. It is the female that makes the nest and uses her sting. It is one of the many wonderful provisions in the insect world of what we call (but sometimes ignorantly) "animal instinct." At present the wasps are filling their nests with grasshoppers

NOTE.—The wasp the article is trying to describe is undoubtedly *Tachytes*, as the *S. Speciosus* is not all common here, while the *Tachytes* is very common his year.—S N. DUNNING

——o——

NATICK, MASS., August 29, 1899.

EDITORS OF ENTOMOLOGICAL NEWS.—I enclose a clipping from *The Boston Traveller* for July 28th, which I think is deserving of repetition in your paper. Having long been a student of insect life, it struck me that it would be an exceedingly interesting sight to see caterpillars emerging full grown from cocoons, and so made haste to investigate, but to my great sorrow none of the caterpillars were obliging enough to emerge to please me, and so I was denied a chance to record the wonderful occurrence for your readers. What I did find was that the trees were really loaded with cocoons of *Orgyia leucostima*. Most seemed to be empty and many were covered with the egg clusters left by the female. I only saw one living larva, and he did not come from a cocoon.

Respectfully yours, E. J. SMITH.

Every lover of Boston Common has reason for alarm and righteous indignation. Its trees, especially the American elms and lindens, are literally covered with cocoons, each containing a well-developed caterpillar, almost ready to begin his career of devastation. There are not simply tens of thousands of the voracious pests—there are millions of them There are thousands on individual trees. Caterpillars are already to be seen crawling upon the trunks. The ends of branches are already eaten bare of leaves. Have we money to expend for the extermination of the English sparrow, whom everybody allows does occasionally at least attack a caterpillar, and none to spend for the destruction of the crawling nuisance itself? Are there thousands of dollars for artistic flower beds in the public garden, and nothing available for the glorious trees of Boston Common? It is said that a whitewash of lime will instantly destroy the cocoons. Men should to-day begin this work and hasten it with every possible means. It should have been done weeks ago.

———o———

PROF. SNYDER and I had another jaunt up City Creek cañon before he left here and we caught some few things more. *Thecla chrysalus* was just coming out and we took a few fine specimens. Speaking of this species, I visited one of the cañons about twenty miles north of this city August 27th, where I found it by the thousand, but as it was so late in the season they were all worn, and after catching two or three dozen of them and finding none that were good enough to keep, I ceased molesting them. Also took at the same time a rather poor specimen of *Pamphila scudderi* The latter part of our summer, *i. e.*, since about August 1st, the weather has been so cool and autumnal in its character, and the warm weather was so late coming, that it has made the season seem so remarkably short. But the past three weeks have been remarkable in the unusual appearance of the large, brightly silvered form of *Argynnis snyderi*, the one with the bright red on the lower side of the secondary wings. During previous years I have never found but two specimens of *Argynnis* in Salt Lake Valley ; that is, outside of the cañons, and those two were seen last year. Within the past few days, however, there have been dozens of *snyderi* flying about the streets, even to the centre of the business portion of the town. These were nearly all apparently good clean specimens, and all of the large form But one seldom has a net handy for such unexpected things, and I only succeeded in taking two specimens of them. I suspect that this species has established itself on the garden violet in our city. Prof. Snyder has written me that he found this form just emerging in the mountains east of Ogden about the last of July.—G WESLEY BROWNING, Salt Lake City, Utah.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfullyreceive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer for each number three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., NOVEMBER, 1899.

There is nothing like the amount of exchanging of specimens going on among entomologists as there should be, and one of the reasons for this is careless collecting. The person that is careful and neat does not care to have his or her collection marred by ragged and flown specimens and is thus deterred from exchanging. Many also think they have little to exchange, but such is not the case, as there is probably no locality in this country that does not produce some desirable species. The local collector should make a special effort to get four or five good species in abundance and in faultless condition, and there would be very little question but what many persons would be glad to have a set, no matter how long they have been collecting. The writer of this notice has been collecting for about thirty years, yet he never fails to replace poor specimens by better ones as opportunity offers. Let the beginners and even advanced students try this plan and put their exchange notices in THE NEWS and the results will doubtless be gratifying. As an example, a Philadelphia lepidopterist could put in a notice like this: "I have faultless examples of *Papilio turnus glaucus*; *Anthocharis genutia*; *Argynnis bellona* and *idalia*; *Pieris protodice*; *Terias nicippe*; *Neonympha canthus*; *Thecla augustus*, *Pamphila massasoit*, *metea*, *zabulon*." Now we feel quite sure there are many persons who would be glad to get a set of some of these species in faultless condition in exchange for some of those they could get equally perfect. 'One fine specimen is worth no end of trash."

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

THE insect mentioned on page 247 of the October NEWS was a pink katydid.—The species was not given —EDS.

TO A MOSQUITO.

O, tiny insect, pity take ;
Go hence ; the haunts of man forsake,
We pray you.
For should our baser passions wake,
You'll rue the day—make no mistake ;
We'll slay you.

For many weary years, it's true,
A *table d'hote* we've furnished you
All gratis.
When you had nothing else to do—
And that was pretty often, too—
You ate us.

With cheerful buzz you'd ply your sting,
And then away would gaily wing,
So fleet, oh !
But now you've had your little fling,
Begone—or we'll not do *a thing*,
Mosquito !

ROBERT T. HARDY, JR.

MR. H. H. NEWCOMB, of Boston, Mass., announces the sudden death of Mr. M. C. Stevenson, of Salt Lake City, Utah, who died last June from an acute attack of appendicitis. The deceased was interested in Lepidoptera.

I AM engaged in a special study of the Lepidopterous genus, *Plusia*, and hope at some time to publish an illustrated monograph of the N. A. species. I have at present examples of about fifty species, many, however, represented by but single specimens. I should welcome any assistance in this work, either in the form of specimens (for which I will give ample return in exchange or cash), or in the following manner: I earnestly request each collector who reads this paragraph to send me a list of the species of *Plusia* present in his collection, with a statement of the localities of capture. If *all* collectors would aid me in this simple way, I shall very quickly be enabled to publish an article showing the geographical distribution of the genus. I await the results of this request, as it will in a measure demonstrate who are ready to do a little work for the advancement of knowledge, and who are afflicted with what Mr Grote once aptly termed "the greed of possession"—possession being the sole aim of their labors. Due credit will be given to all who aid me in any manner.—R. OTTOLENGUI, 115 Madison avenue, New York City.

PSOCUS SPECIOSUS, Aaron.—A single specimen of this species was collected at Dripping Spring, Organ Mountains, New Mexico, August 20, 1898, by Martin D. Cockerell and José Mendoza. I am indebted to Mr. N. Banks for assistance in its determination. This pretty species was described from North Carolina and was not expected so far west. This is the first record of a *Psocid* from New Mexico.—T. D. A. COCKERELL.

Entomological Literature,

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in **HEAVY-FACED TYPE** refer to the journals, as numbered in the following list, in which the papers are published; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

4. The Canadian Entomologist, London, Ont., Oct, '99.—**5.** Psyche, Cambridge, Mass., Oct., '99.—**6.** Journal of the New York Entomological Society, Sept., '99.—**8.** The Entomologist's Monthly Magazine, London, Oct., '99.—**11.** The Annals and Magazine of Natural History, London, Sept., '99.—**21.** The Entomologist's Record, London, Sept. 15, '99.—**35.** Annales, Société Entomologique de Belgique, xliii, 7, Brussels, July 29, '99.—**41.** Entomologische Nachrichten, Berlin, '99.—**45.** Deutsche Entomologische Zeitschrift, '99, Ites Lepidopterologisches Heft, Berlin, Sept. 15.—**50.** Proceedings, U. S. National Museum, Washington, xxii, '99.—**55.** Le Naturaliste, Paris, '99.—**58** Revista Chilena de Historia Natural, Valparaiso, '99.—**60.** Anales, Museo Nacional de Buenos Aires, vi, '99.—**64.** Annalen, K. K. Naturhistorischen Hofmuseums, xiii, 1-3, Vienna, '98, rec'd. Oct '99,—**70.** Journal, Institute of Jamaica, ii, Kingston, '99.—**79.** La Nature. Paris, '99.—**81.** Biologisches Centralblatt, Erlangen, '99—**116.** Zoolical Bulletin, ii, 6, Boston, Sept. '99.—**117.** Schriften des Vereines zur Verbreitung naturwissenschaftlicher Kenntnisse in Wien, xxxix, '99.

The General Subject.—Bordage, E. On the spiral mode of growth of appendages in course of regeneration in Arthropods, Comptes Rendus, L'Academie des Sciences, Paris, Sept. 4, '99.—Boutan, L. Tracheates, *Periplaneta orientalis*, figs., and Janet, C. Hymenoptera, the Ant., figs. in: Zoologie Descriptive, Anatomie, Histologie et Dissection des Formes Typiques d'Invertébrés [Redacteur L. Boutan] Paris, Octave Doin, 2 vols, 1900.—Brunner von Wattenwyl, C. The coloration of insects, **117.**—de Bruyne, C. On the intervention of phagocytosis in the development of the Invertebrates, 5 pls., Memoires

Couronnés et Memoires des Savants Etrangers publiés par l'Academie Royale des Sciences, etc., de Belgique, xli, Brussels, Dec , '97, to July, '98.—Carpenter, G. H. Insects, their Structure and Life. See review, *post*.—Chapman, T. A. The theory of emboitement, 21.—Enteman, M. M. The unpaired ectodermal structures of the Antennata, figs., 116.—Harris, T. W. Manuscript notes by the late T. W. Harris on Say's insects and papers, ii [S H. Scudder, editor], 5.—Porter, C. E. Essay towards a Chilian bibliography of Natural History, 58, July, Aug.—Poulton, E. B., and Sanders, C. An experimental inquiry into the struggle for existence in certain common insects, Report of the Sixty-eighth Meeting of the British Association for the Advancement of Science, held at Bristol, Sept., '98, London, '99.—Silvestri, F. Geographical distribution of *Koenenia mirabilis* Grassi and other Arthropods, *Peripatoides Blainvillei* (Blanch.), Zoologischer Anzeiger, Leipsic, Sept. 18, '99.

Economic Entomology.—Anon. The present position of the investigation of the malarial parasite, Nature, London, Sept. 7, '99.—Anon. [Results of the German Malaria Expedition], Insekten Borse, Leipsic, Oct. 5, '99—Bolle, J. The silk-worm of the mulberry trees, its culture, diseases and the means for combatting them, 117.—Fletcher, J. Worm snakes and snake worms, Ottawa Naturalist, Oct. '99.—Green, E. E. On a tea pest from India, figs., 8.—del Guercio, G. Contributions to the study of the forms and the life-history of *Phlœothrips oleæ* and on some new soap mixtures of carbon bisulphide and nicotine as insecticides, fig., Bulletino, Societa Entomologica Italiana, xxx, 3-4, Florence, Aug 31, '99; Contributions to the study of the forms and of the life-history of *Trama radicis* Kaltenbach, with a note on the systematic position of the genus in the family *Aphidæ*, figs., *ibid*.- Lochhead, W. *Dermestes lardarius* in honeycomb, 4.—de Loverdo, J. The tsetse fly disease, 79, Sept. 9.—de Mériel, P. Steam engine for insecticide powders, fig., 79, Sept. 2 - Pettit, R. H. The clover root mealy bug., figs., 4.—Schaudinn, F. Alternation of generations of the *Coccidiæ* and the new malaria researches, Sitzungsberichte der Gesellschaft der Naturforschenden Freunde, Berlin, July 18, '99. - Slingerland, M. V. The cherry fruit-fly, a new cherry pest, figs. 1 pl., Bulletin 172, Sept., '99, [and] Emergency Report on Tent Caterpillars, figs., Bulletin 170, Cornell University Agric. Exper. Station, Ithaca, N. Y., May, '99.—Troop, J. The San José and other scale insects and the Indiana Nursery Inspection Law, Purdue University Indiana Agric. Exper. Station, Bulletin No. 78, La Fayette, Ind., May. '99.—Wilcox, E. V. Abstracts of recent literature, Experiment Station Record, xi, 1, U. S. Dept. of Agriculture, Washington, '99.

Arachnida.—Goeldi, E. A. Arachnological studies relating to Brazil (cont.) [in Portuguese], Boletim do Museu Paraense de

Historia Natural e Ethnographia, II, 4, Para, Dec., '98. Rec'd. Oct., '99.

Myriopoda.—Porter, C. E. Introduction to the study of the Myriopods (concl.) [in Spanish], 58, June.

Apterygota-Banks, N. The Smynthuridæ of Long Island, New York,* 6.—Silvestri, F. Brief comparative description of *Lepidocampa* Oudms. with *Campodea* Westw., 2 pls., **60.**

Orthoptera.—Boutan, L. See the General Subject.—Heymons, R. On vesicular organs in grasshoppers, figs., Sitzungsberichte der königlichen preussischen Akademie der Wissenschaften, Berlin, June 15, '99.—Morse, A. P. New North American Tettiginæ, iii,* **6.**—Tümpel, R. Die Geradflügler Mitteleuropas. Eisenach, M. Wilckens. Lieferung 5. [Pp. 97-136, figs. 25-46, pls. xv-xvii.] Rec'd. Oct., '99.

Neuroptera.—Kellogg, V. L. A list of the biting lice (Mallophaga) taken from birds and mammals of North America, **50,** No. 1183.—Tutt, J. W. Migration and dispersal of insects: Odonata, **21.**

Hemiptera.—Cockerell, T. D. A. Tables for the determination of the genera of Coccidæ, **4.**—Cooley, R. A. The Coccid genera *Chionaspis* and *Hemichionaspis,* 9 pls. Special Bulletin, Hatch Experiment Station of the Massachusetts Agric. College, Amherst, Mass. Aug. 10, '99.—Distant, W. L. Rhynchotal notes, Heteroptera: Plataspinæ, Thyreocorinæ and Cydninæ, **11.**—Green, E. E. Observations on some species of Coccidæ of the genus *Ceroplastes* in the collection of the British Museum, 1 pl., **11.**—del Guercio, G. See Economic Entomology.—Heidemann, O. A new species of Tingitidæ,* **4.**—King, G. B. A new *Pulvinaria* from Massachusetts, figs., **5.**—Kirkaldy, G. W. On some aquatic Rhynchota from Jamaica [reprint from Entomologist, London, Feb. 1899], **70.**—Lander, B. Note on the seventeen-year Cicada, **6.**—Melichar, L. Monograph of the Ricaniidæ (Homoptera), 6 pls.,* **64.**—Parrott, P. J. New Coccids from Kansas,* figs., **4.**

Coleoptera.-Chobaut, A. Habits and metamorphoses of *Platypsyllus castoris* Rits., figs., **55,** Sept. 1.—Cockerell, T. D. A. A new Meloid beetle parasitic on *Anthophora,* **4.**—Davis, T. W. Whirligig beetles taking a sun-bath, **6.**—Ganglbauer, L. Die Käfer von Mitteleuropa, III Bd, 2te Hälfte. Familienreihe Clavicornia. 16 text figs. Wien. Carl Gerold's Sohn. 1899. Pp. 409 to 1046.—Horn, W. On the classification of the Cicindelidæ, **45** (Coleopterologisches heft 1, July).—Jacoby, M. Descriptions of new species of South American phytophagous Coleoptera, Entomologist, London, Oct., '99.—Kerremans, C. Contribution to the study of the American intertropical fauna, Buprestidæ, ii,* **35.**—Schulz, W. A. On the life-history of the South American Cerambycid genus *Hippopsis,* figs , 41, July.—Seidlitz. G. Coleoptera Vter Bd , 2te Hälfte' 3te Lieferung, in Naturgeschichte der Insekten Deutschlands begonnen von Dr. W. F. Erichson, Berlin, '99. [Pp. 681-968 Oedemeridæ].—Xambeu, Capt. Habits of *Ateuchus laticollis* L., a Coleopter of the group of coprophagous Lamellicorns, 55, Sept. 15.

Diptera —Coquillett, D. W. New genera and species of Dexidæ,* 6 —Doane, R. W. Notes on Trypetidæ, with descriptions of new species,* 2 pls., 6.—Girschner, E. Contribution to the life-history and classification of the Muscidæ, figs., 41, June —Hough, G. de N. Synopsis of the Calliphorinæ of the United States,* figs., 116—Rübsaamen, E. H. Communications on new and known galls from Europe, Asia, Africa and America, figs., 2 pls., 41, Aug, and Sept.; On the living habits of the Cecidomyidæ, ii, iii, 81, Sept. 1 and 15.—Wheeler, W. M. New species of Dolichopodidæ from the United States,* 4 pls. Proceedings, California Academy of Sciences (3) ii, 1, San Francisco, Sept. 29, '99.

Lepidoptera. Aurivillius, C. Rhopalocera æthiopica: the butterflies of the Ethiopian faunal region, a systematic geographical study, 6 pls., figs. Kongl. Svenska Vetenskaps Akademiens Handlingar, xxxi, 5. Stockholm. '98. Rec'd Oct. 5, '99.—von Bönninghausen, V. Contribution to knowledge of the Lepidopterous fauna of Rio de Janeiro, tribus Sphingidæ, 45.—Cockerell, T. D. A. A new Noctuid of the genus *Cirrophanus*,* 4.—Coquillett, D. W. On the early stages of some California Lepidoptera. 6.—Dogniu, P. New Heterocera from South America, 35.—Druce, H. Descriptions of some new species of Heterocera, 11.—Dyar, H. G. Description of the larva of *Hadena miseloides* Guen., 4; Life-history of *Hypsoropha hormos* Hübn , 4; Life-histories of North American Geometridæ, v, 5; Life-history of a European slug-caterpillar, *Cochlidion aveltana*, 1 pl , 6; A new genus of Cochlidionidæ from Virginia, 6.—Gauckler, H. Double cocoons of *Saturnia spini*, 45.—Grose-Smith, H. Rhopalocera Exotica, being illustrations of new, rare, or unfigured species of butterflies With colored drawings and descriptions London: Gurney and Jackson. Part 49, July, '99.—Grote, A. R. The diphylism of the diurnal Lepidoptera, 4.—Hofmann, O. Remarks on "Experimentelle Zoologische Studien mit Lepidopteren by Dr. M Standfuss, 45.—Lathy, P. J Butterflies and moths, 70.—v. Linden, M. On Franz Friedmann's "Ueber die Pigmentbildung in den Schmetterlingsflügeln," 81, Sept. 15.—Meyrick, E Macrolepidoptera in: Fauna Hawaiiensis or the Zoology of the Sandwich (Hawaiian) Isles: Being results of the explorations instituted by the joint committee appointed by the Royal Society of London.... and the British Association for the Advancement of Science and carried on with the assistance of those bodies and of the Trustees of the Bernice Pauahi Bishop Museum at Honolulu. Edited by David Sharp. vol. 1, part ii, pp. 123-175, pls. iii-vii. Cambridge, University Press, June 8, '99.—Moore, F. Lepidoptera Indica, part xxxix. London, Lovell Reeve & Co., '99. Rec'd. Sept. 28. [Pp. 33-64, pls. 303-308, Vol. 4 Nymphalinæ-Limenitina.] —Rothschild, W. and Jordan, K. A monograph of *Charaxes* and the allied prionopterous genera (cont.), figs. Novitates Zoologicæ, vi, 2, Tring, Aug. 15, '99 —Schaus, W. New species of Lithosiidæ from tropical America,* **6**.—Schwartze, E. To knowledge of the development of the gut of Lepidoptera, 4 pls., Zeitschrift für Wissenschaftliche Zoologie, lxvi, 3, Leipsic, Sept. 22, '99. Smith, J. B. New species of nocturnal moths of the genus *Campometra* and notes,* **50**, No. 1184.—Stevenson, C. *Chlorippe celtis* Bd.-Lec. captured on Montreal Island, **4**.—Stichel, H. Critical remarks on the specific determination of butterflies, i, *Catonephele* and *Nessæa* Hbn., figs, 1 pl., Berliner Entomologische Zeitung, xliv, 1-2, July, '99.—Weymer, G. *Papilio orthosilaus*, n sp., **41**, July.

Hymenoptera.—Ashmead, W. H. Classification of the entomophilous wasps, or the superfamily Sphegoidea, v, **4**.—Burgerstein, A. Plants and Ants, Wiener Illustrirte Garten-Zeitung, Aug. and Sept., '99.—Cockerell, T. D. A. The Panurgine bees, **5**; See also Coleoptera.—Fowler, C. The *Habropoda* and *Didasia* of California,* **4** —Friese, H. Monograph of the bee genera *Megacilissa*, *Caupolicana*, *Diphaglossa* and *Oxæa*, **64**.—Janet, C. See Boutan L. and Janet C. in the General Subject.—Konow, F. W. New South American Tenthredinidæ, **60**.—Krieger, R. On some Ichneumonid genera allied to *Pimpla*, 1 pl., Sitzungsberichte der Naturforschenden Gesellschaft, Leipsic, '97-'98. Rec'd Oct. '99.—Perez, J. Three new *Megachile* from Chili, **58**, July.—Sladen, F. W. L. *Bombi* in captivity and habits of *Psithyrus*, **8**.

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INSECTS, THEIR STRUCTURE AND LIFE. A PRIMER OF ENTOMOLOGY. BY GEORGE H. CARPENTER, B.Sc. Lond.... Assistant Naturalist in the Science and Art Museum, Dublin...... London: J. M. Dent & Co., 29 and 30 Bedford street, W. C. 1899. 12mo. Pp. xii, 404, 183 figs in the text. Furnished by the New York publishers, the Macmillan Co., 66 Fifth avenue. Received from John Wanamaker's. Price, $1.75

"Not one, even of the many books made in these days is likely to be thought superfluous by its author. And in spite of—to a great extent indeed because of—the thousand and more original works on Insects now published yearly, it seems that the student has need of a small, inexpensive, English book, sketching in outline the whole subject of entomology. Such a volume as this is necessarily for the most part a compilation." So begins the Preface, and the sources of the compilation are then given

Chap. I, The Form of Insects, using a cockroach as a typical member of this class, describes the structure of adult insects by comparisons with this type. It is significant that even in such a handbook as this about 60 pages of the 83 comprising this chapter are devoted to the internal organs. This leads us to expect that prominence will be given to embryonic development in Chap II, The Life-History of Insects, pp. 84-127, and such is the case, although, of course, larval and pupal stages and metamorphosis are also treated of. Chap. III, The Classification of Insects, pp. 128-159, contains also some clear and interesting summaries, necessarily brief, of causes known to effect modifications of insects. Chap. IV, The Orders of Insects, briefly describes these groups and their component families, pp. 160-280. Chapter V, Insects and Their Surroundings, deals with habitats, geographical distribution, insects and flowers, food, parasitic forms, methods of protection, mimicry, social communities, to p. 343. Chap. VI, The Pedigree of Insects, pp. 344-378, gives us a genealogical tree, among other interesting speculations. A valuable "References to Literature," of 217 titles (pp. 379-392), classified by subjects, indicates the authorities for the statements in the preceding text. Index, pp. 393-404.

There are few, if any, original illustrations: Their sources are acknowledged under each, and so many are copied from the publications of the U. S. Department of Agriculture that they fit the book even more for use by American students than by Englishmen.

As the above summary of the contents shows, this work is quite encyclopedic as regards the number of topics discussed, and it can be strongly recommended to all those who desire a view of Entomology on its many sides. P. P. C.

DOINGS OF SOCIETIES.

Minutes of Newark Entomological Society, September 10th. Meeting called to order, with Vice President Kemp in the chair and six members present.

A vote of thanks was tendered Dr. Kunze, of Arizona, who donated a lot of Lepidoptera for the Society's collection.

Mr. Angleman reported that *Callimorpha triangulata* Smith was common at Newark June 18th, adding that this was a week earlier than usual.

The members, with some exceptions, reported poor collecting this season in the vicinity of Newark.

Mr. S. T. Kemp remarked that he had a successful two weeks' trip, August 11th-24th, at Swartzwood Lake, N. J. Among the captures were: *Adelphagrotis prasina*, *Agrotis* *geniculata, Peridroma occulta, Noctua normaniana, Hadena fractilinea, Trigonophora periculosa, Orthosia auriantigo,* all taken at night. He remarked that he found the following *Sphinx* on Evening Primrose: *D. lineata, C. tersa, P. pandorus, S. erimitus* and *P. celus.*

Mr. Seib remarked that Betunia or Four O'clock was more attractive.

The genus selected for identification and study for the next meeting was *Carneades.*

Meeting adjourned. A. J. WEIDT, Sec'y.

At the September meeting of the Feldman Collecting Social, held at the residence of Mr. H. W. Wenzel, 1523 South Thirteenth Street, thirteen persons were present.

Prof. J. B. Smith exhibited a small apple-tree, to which was attached a cocoon of the bag worm, the silken thread by which it hung having girdled the tree in consequence of the latter's rapid growth. He also recorded the capture of *Ommatostola lintneriana,* at lights, at Anglesea, N. J., September 3d. It is a coast species, hitherto quite rare, and was quite abundant on the date mentioned.

Mr. Johnson reported the capture of a specimen of *Pangonia chrysocoma,* a rare Dipteron, at the Delaware Water Gap.

Mr. H. W. Wenzel exhibited specimens of *Lomechusa cava,* from Newtown Square, Pa. It had not before been recorded from this region, and the present specimens were captured in the nest of *Camponotus vicinus.*

Dr. Castle showed Coleoptera from Hamilton Co., New York, among which were some interesting species.

Mr. Haimbach exhibited a number of interesting Lepidoptera from Holly Beach, N. J., collected in July last.

Prof. Smith called attention to *Trechus chalybœus,* collected near South River, New Brunswick, N. J., by Master Harry Wenzel. They were associated with an ant, *Lasius mixtus,* under large stones. Calfornia and British Columbia specimens in hand were dated September, whereas the present ones were taken in July, and were not before recorded from New Jersey.

Mr. H. Wenzel spoke of the impossibility of defining the geographical distribution of the North American *Pselaphidæ* and *Scydmænidæ*, from our present knowledge, judging from his experience in collecting these insects during the past season, when species not before recorded from these regions had been taken abundantly. Hitherto these insects had not been collected in a careful way by coleopterists in general, and for this reason theories as to their distribution are likely to be of little value at the present time. At a future date he expects to exhibit his collections of these insects to the members of the Social. He stated that the habits of the same species differ considerably as to its place of abode, being frequently found in ants' nests and in places where ants were entirely absent.

The great abundance of several species of *Harpalus* during the past summer was discussed by several of the members.

WILLIAM J. FOX, Secretary.

A meeting of the Entomological Section of the Academy of Natural Sciences was held September 28th, Mr. Philip Laurent, Director, presiding. Fifteen persons present. Mr. Fox reported that some co-types of *Crabro* had been received from and presented by Prof. Trevor Kincaid. Mr. W. H. Ashmead spoke of the phenomenal growth of the collection of insects of the U. S. Department of Agriculture, and said exotic species had been coming in by the thousands. In reply to Mr. Laurent Mr. Ashmead stated that he had estimated the number of specimens of insects in the collection of the National Museum as 1,350,000. The strength of the collections in the various orders was dwelt on. Mr. Laurent exhibited a living specimen of *Stagmomantis carolina*, captured in this city on the river front. He had received four specimens of *Tenodera sinensis* this year, taken in Germantown, Philadelphia. He had received the first specimen from Mr. Meehan in 1896. The method of the Chinese in making *Mantids* fight in a bowl was mentioned. Mr. Ashmead spoke of the value of these insects in destroying noxious species. Mr. Laurent stated that *Ceratomia catalpæ* was abundant this season, and that Mr. Reif had found 180 pupæ at Moore Station, Pa. Mr. Ridings said that in walking along

Michaux avenue, in Fairmount Park, he had met the Park gardener, who called his attention to the way in which the water lilies are destroyed by an insect burrowing in the stem. Specimens showing the damage were exhibited. The injury was probably done by *Pyrausta nelumbialis* Smith. Mr. Ashmead said a lily in the grounds of the Department of Agriculture had been injured by a *Pyralid* larva. Mr. Johnson said a species of *Chironomous* had been reared by Prof. Smith from the *Victoria regia*. Dr. Calvert stated that during the last of August he had made an expedition into Southern New Jersey, by means of the bicycle, with a view of getting data in relation to the *Odonata* for Prof. Smith's new Catalogue of the Insects of New Jersey, which is shortly to appear. The route was Camden to Hammonton, Egg Harbor City, Gloucester, Absecon, Bargaintown, Somers Point, Petersburg, Tuckahoe, Dennisville, Eldora, Millville, Bridgton, Alloway, Camden, thus making a circle through the lower half of the State. *Ischneura kellicotti* was found at seven places. He had also found it earlier at Block Island, R. I. At Bargaintown he had gotten interesting data in the cedar bogs through which the Hopatcong Creek flows. The flight of the male *Hetærina* was described. They dance up and down and at the same time make a circle of about four inches. The object of this dance was unknown.

The species of *Somatochlora* were mentioned, the speaker keeping a lookout for them. They were not infrequently seen, but none were taken, on account of their rapid and high flight. At Clementon *Enallagma pollutum* was taken, a species which he had rather expected would be found in the vicinity. The collections made by S. N. Rhoads at Haddonfield were also examined and additional data secured. Mr. Liebeck exhibited the 200 specimens, 73 species, of Coleoptera purchased for the American Entomological Society from the Griffith collection. Various rare and interesting species were mentioned. Mr. Ashmead spoke of the large collection of beetles made by the late Mr. H. S. Hubbard in Arizona and said there would be 500 new species in the lot. Mr. Caspar Rehm was elected an associate of the Section.

DR. HENRY SKINNER, Recorder

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

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SOME TETTIGIAN STUDIES.

By J. L. HANCOCK.

In Prof. Ignacio Bolivar's Essay, '87, there is collectively brought together under the genus *Paratettix* a number of species which I have found necessary to revise. We find in the disposition of species there are three sections, the first, page 270, being separated from the rest of the series by the characters of the posterior tarsi, as follows: Section one, first and third articles of the posterior tarsi equal in length, under which two species are thus grouped, namely: *Paratettix peruvianus* Bol. and *Paratettix cayennensis* Bolivar.

These two species belong to the same category as the new species described here and they form a distinct genus, to which I have given the new name, *Allotettix*, the type being *prolongatus*. They, moreover, approximate the *Metrodoræ*, instead of the *Tettigiæ*, and are in consequence dropped from the original *Paratettix* series entirely.

It is but proper to state that my esteemed colleague, Prof. Bolivar, in a communication to me recognized that a change, such as I have effected, would probably be necessary, but the species which is described as *Allotettix prolongatus* he identified as the same as his *peruvianus*. The latter is quite unlikely, as a careful comparison will show.

Allotettix, gen. nov.

Body rugose, tuberculate, face oblique, as seen in front, narrow. Vertex narrower than an eye, middle carinate, sulcate on either side, the crown very short, the vertex on a higher plane than the occiput, which slopes backwards, and in front not advanced to the anterior border of the eyes; in profile not visible. Anteriorly subtruncate, passing laterally into little short convexed flexures. Eyes prominent. Frontal costa narrowly divided. Antennæ inserted a little below the anterior inferior border; filliform rather short, consisting of fourteen articles, the superior ocelli scarcely perceptible in profile at the middle of the anterior border of the eyes. Pronotum depressed, truncated in front, strongly prolongated posteriorly, ending in a sharp apical process, median carina scarcely elevated, humeral angles obtuse, posterior median lobule of lateral lobes feebly developed, the subhumeral sinus shallow, the posterior angle directed obliquely downward and backwards. Elytra elongate The first and third articles of the posterior tarsus about equal in length.

Allotettix prolongatus, sp. nov.

Body strongly prolongate, rugose tuberculate, fuscus, narrow, above depressed, tibiæ annulated with flavus. Vertex a little narrower than an eye, subnarrowed in front, feebly carinated in the middle, on either side sulcate, anteriorly subtruncate, passing laterally into little convexed flexures, ending abruptly near the anterior inner border of the eye; not advanced as far as the anterior border of the eye, in profile not visible, being obscured by the prominent eyes; frontal costa depressed between the eyes, a little protuberant opposite the antennæ, about on a line with their anterior border, the forks as seen in front gradually but narrowly separated, diverging to the middle ocellus. Pronotum anteriorly truncate, posteriorly strongly prolongate, subulate and acuminate, frequently extending within one millimeter of twice the length of the posterior femora, median carina scarcely elevated, sinuate more or less tuberculate in its backward course, dorsum between the shoulders a little unevenly swollen, rugose papillate, just behind strongly depressed, dorsal surface of the apical process rugose, uneven and covered with numerous longitudinal tuberculæ, lateral angles obtuse, posterior angle of the lateral lobe obtuse, rounded. Elytra elongate, impresso-punctate, with the apex subacutely rounded; wings about as long as the process or scarcely longer. Femoræ unmodified, slender, the posterior femora narrow, the carinæ of tibia with rather small and scarcely more than five or six spines, on the inner carinæ as few as three or four beyond the middle; the first article of the posterior tarsus equal in length to the third, the first and second pulvilli united about equal to the third, the first and second acute, the third straight below.

Length body, 12-13mm., pronot. 16 17½mm., post, fem., 7-7.5mm·

Locality, Bolivia, South America. Hancock.

Allotettix peruvianus, Bol.

Obscure, ferrugineus, fusco variegated. Vertex nearly as wide as an eye, horizontal, anteriorly subnarrowed, in front scarcely transversely carinated; frontal costa between the antennæ obliquely depressed, obscurely sinuate. Pronotum posteriorly long and subulate, median carina between the shoulders sinuate, between the shoulders with concavities, posterior angle of the lateral lobe with the apex widely rounded. Elytra oblong, subacuminate; wings as long as the process. Femoral carina unchanged, first article of the posterior tarsi not longer than the third, third pulvillus shorter the second and first united, first pulvillus with the apex shortly spined and acute.

Length of body, ♂♀ 9 13.5mm., pronot., 13.5-14mm., post fem. 5.5-7mm.

Locality—Pumamarco, Peru, Museum of Varsovie. Bolivar.

Allotettix cayennensis, Bol.

Pale tuscus, rugulose, vertex narrower than an eye, not produced in front of the eyes, middle carinated, lateral lobes externally rounded; frontal costa between the eyes little sinuate. Pronotum narrow, posteriorly long and subulate, in front of the shoulders, crowded together, median carina a little elevated, between the shoulders subsinuate. Elytra narrowly rounded at the apex. Carinas of the femora undulate, crenulate, posterior femora elongate, before the apex reduced, first and third articles of the posterior tarsi nearly equal in length, apical pulvillus acute, the third pulvillus scarcely shorter than the second and first united. Valves of the ovipositor rather short.

Body length, ♀, 8mm., pronot., 10mm., post. fem., 5.5mm.

Locality, Cayenne (Coll. of M. Brunner). Bolivar.

Among some Tettigidæ received from Mexico, through the kindness of Mr. O. W. Barrett, I am able to record a new and very interesting species of *Neotettix* Hancock.

Neotettix barretti, sp. nov.

Body small, rugose-granulate. Vertex fully twice the width of an eye, anterior border convexed and advanced considerably in front of the eyes, middle carinate, projecting a little in front and ending backwards at a line drawn across the anterior third of the eyes, feebly sulcate or rather depressed on either side, mammilate posteriorly; frontal costa straight and subvertical, the apex rounded angulate, seen in front the frontal costa strongly forked, the branches starting opposite the middle of the eye, suddenly diverging in their descension, being farther apart between the antennæ where they are parallel, tending to slight convergence at the median ocellus. Antennæ very short, filiform and consisting of twelve articles They originate as seen in profile at a point a little below and in front of the anterior inferior border of the eye. The posterior ocelli are plainly visible a little in front of the middle of the eyes, midway between the anterior margin of the frontal costa and the eyes, Pronotum anteriorly truncate, the anterior margin of the dorsum crowded forward over the head, a little constricted in front of the shoulders, tectiform. rugose, a little broadened, the humeral angles obtuse, angulate, carinated, the little anterior lateral, carinæ prominent, median carina of the pronotum strongly elevated, thin, straight above, roundly curving near the anterior border, posterior angle of the lateral lobes widely and obtusely angulate. Elytra narrow, apex subacutely rounded, wings not visible. Anterior femora compressed below, with a small drawn out lobe, ending near the apex ; middle femora compressed above, obscurely undulate, inferiorly undulate, with a little median prominence; posterior femora large, the first article of the posterior tarsi exceedingly long, being a third longer than the last article; pulvilli inconspicuous, the first small, the second and third longer and nearly equal in length.

♂. Body length, 7mm., pronot. 7mm., post fem. 4 55m

Locality, Tizapan, D. F., Mexico. O. W. Barrett.

Named in honor of Mr. Barrett, who found this very interesting species.

The vertex is more produced in front of the eyes in this species than any other species of *Neotettix* with which I am familiar. In a series of specimens from Minnesota, which I have been able to examine through the generosity of Prof. Otto Lugger, there was a single specimen of *Nomotettix* Morse, which though nearly allied to *Nomotettix cristatus* Harris, has some distinguishing characters which seem sufficiently pronounced to separate the species, and which I herewith set forth.

Nomotettix sinufrons, sp. nov.

Body granulate, rugose. Vertex very wide, equal to about twice the width of an eye; middle rather feebly carinate, shallowly sulcate on either side of the median ridge, front border broadly but roundly curved, the mid-carina very little projecting, in profile strongly produced in front of the eyes; frontal costa sinuate opposite the middle of the eyes, protuberant between the antennæ, dorsum of the pronotum anteriorly acute angulate, a little produced over the head, posteriorly subulate, between the shoulders strongly tectiform, behind on the dorsum with a number of oblique wrinkles, median carina prominent, cristate, depresso convexed, humeral angles obtuse. Elytra narrow, apex subacuminate, wings not reaching to the end of the apical process. Femoræ unchanged; posterior femora large, the first article of the posterior tarsi much longer than the third, strongly serrulate above, pulvilli straight below.

♀, Body length, 9 5mm., pronot. 8.5, post. fem. 6mm.

Locality, St. Anthony Park, Minnesota. Prof Otto Lugger.

This pecies is nearly allied to *N. cristatus* Harris, differing from that species principally in the pronotum not being so strongly compressed above, the sinuation not so deep in front of the eyes, the frontal costa more advanced in front of the eyes, the vertex more obtusely conico-angulate. In *N. crustatus* the frontal costal is more deeply excavate and the median carina of the vertex more elevated, giving the crown of the head in profile a more arched appearance. Although described from one specimen, these differences are such as to warrant me without hesitancy in giving this species a place here.

Another point which I would like to bring forward in the present connection is in regard to *Tettix granulatus* Kirby. This species is undoubtedly the same as described by Prof. Bolivar in his Essay, '87, page 266, figs. 22-22a, as *Tettix brunneri*, making the latter name synonymous, but on the other hand this is not the species commonly understood as *Tettix granulatus*, found in the northeastern United States and southward, which has a slender form with long subulate pronotum. On the contrary, the true *granulatus* has the body compact, rather large, the wings only extending as far as the apical process, as more fully described below. The result of these researches leaves no other way open but to name the species further southward or in the temperate region, and to make my contention more clear I have described the two species in question.

Tettix granulatus Kirby.

Syn, **Tettix brunneri** Bol.

Body granulate, fusco testaceus, above frequently with two black spots. Vertex wider than the eye, middle strongly carinated, quite deeply sulcate on each side, anteriorly obtuse angulate, the facial frontal costal widely sulcate, the branches running sub-parallel, slightly widening at the middle ocellus in profile, the median carina of vertex curved above the eyes; in front opposite the middle of the eye the frontal costa is shallowly sinuate. Pronotum truncate posteriorly subulate, apex slightly passing the posterior femor, dorsum tectiform, broad between the shoulders, the median carina distinctly elevated, percurrent, near the front margin more compressed, humeral angles obtuse, carinated, the little anterior lateral carina distinct and parallel. Elytra oblong, apex rounded, impresso-punctated, wings extended almost as far or to the apex of the process Anterior femora obscurely undulate, middle femora unchanged, the posterior femora rather slender, becoming considerably narrower near the apex; carina straight crenulate, the first article of the posterior tarsus above finely serulate, very much longer than the last two united, the pulvilli below straight, the first quite small, the second about twice as long as the first, the third as long as the first two united.

Body length, ♂ ♀, 9.12mm., pronot., 10.12mm., post. fem., 5 5-6mm. Bolivar.

The specimen before me measures: Body, ♀ 11mm., pronot , 10 5. post. fem., 6mm.

Locality, Hudson Bay. Bolivar.

For the specimen above mentioned in my collection I am indebted to Prof. Bolivar, of Madrid, Spain.

A specimen is said to have been taken in latitude 65° and White found specimens on the borders of the Mackenzie and Slave Rivers, and at Fort Simpson. Bethune relates that this is the species found in New England States and Minnesota, but this is an error. This species is closely related to *Tettix incurvatus* Hancock and *Tettix bipunctatus* of Europe. The latter is much smaller in stature, the median carina proportionately more cristate, approaching *Nomotettix* and the frontal costa of the face is not sinuate. For specimens of the latter species in my collection I am indebted to Mr. Malcolm Burr. of East Grinstead, England. The bibliography of *Tettix granulatus*, as above described, is as follows: Kirby, Fauna, Bor. Amer. IV, p. 251; DeHann, Bijdr. Kenn, Orthopt, 143; White, Rich. Arct. Search, Exp. II, 360; Bethune, Kirby's Fauna, Bor. Amer. Insects, p. 121; Bolivar, Essai s. l. Acrid, tribu, Tettig, Amer Soc. Ent. Belgique, p. 266, figs. 22-22a.

Tottix morsei, sp. nov.

Syn. Tettix granulatus Kirby.

Body granulate or very little rugose, slender, polyornate. Vertex considerably wider than an eye, middle carinate, on each side sulcate from the middle of the eye to the anterior margin, obtuse angulate in front, the median carina not projecting beyond the apex, in profile angulate produced, the crown substraight showing a little above the eyes; facial frontal costal strongly in advance of the eyes, as seen in front bifurcating near the apex, the branches gradually and but little diverging in their descension, slightly depressed opposite the eyes. Face strongly oblique, the posterior ocelli showing just in front of the middle anterior margin of the eye. Antennæ short, not reaching to the humeral angle. Pronotum anteriorly truncate or barely angulate, the dorsum tectiform, not very broad between the shoulders, median carina distinctly elevated percurrent, nearly straight, sometimes rather undulating, a little more elevated near the anterior border, posteriorly long, slender, subulate, passing considerably beyond the posterior femora, humeral angles, strongly obtuse or subrounded. Wings well developed, passing beyond the apical process, posterior angle of the lateral lobes very slightly and obliquely diverging, strongly obtuse. Elytra oblong, apex subacutely rounded external surface minutely punctate. Anterior femora slender, unchanged, middle femora slender, unchanged, middle femora with straight carinæ, the posterior rather slender, very much reduced near the apex, the first article of the posterior tarsus but little longer than the other two united, the pulvilli straight below, the first acute, the second about twice as long as the first, the third as long as the first two united

Body length, ♂ ♀, 8 10mm, pronot., 11-12 5mm., post. fem, 5.5-6mm.

This is the common form found in most collections. A specimen from Northern Illinois in the collection of Mr. A. Bolter, of Chicago, measured sixteen millimeters in total length, this being the maximal size of any examined.

A series of specimens from St. Anthony Park, Minnesota, showed some departure from the type form. There was variation in the angularity of the vertex, some being very obtuse; the median carina of the pronotum, instead of being straight, was undulating in its backward course, the dorsum was decidedly rugose, the posterior tarsus with the first article a little longer than the last two united, the pulvilli straight below, the first conico-acute, the second and third equal in length were a little longer than the first. In this variety we see an approach to *Tettix luggeri* Hancock.

Var. 2. Abbreviated examples with the pronotum not extending so far backwards, the wings being coincidently shorter.

The species above described is named in honor of my friend and co-worker, Prof. A. P. Morse.

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THE CATOCALAE OF MONTGOMERY COUNTY, VIRGINIA.

BY PROF. ELLISON A. SMYTH, JR.

The interesting commingling of Northern and subtropical forms in the Lepidoptera of the Alleghanian fauna is well illustrated in the *Catocalæ* of this county. The following notes apply to the immediate neighborhood of Blacksburg, Montgomery County, Virginia, among the Alleghanies and at an elvation of about 2,300 feet.

As far as my observations extend, based upon my own collecting for a number of years, there are twenty-seven good species of *Catocalæ*, or, counting varietal forms, nearly forty species and varieties found here. More strictly Northern are such species as *C. parta*, *concumbens*, *habilis*, *paleogama*, etc., while the following Southern forms occur: *C. viduata* Gn. (*mœstosa* Halst.), *desperata* Gn., *lachrymosa* and *sappho*. The past summer was the first occasion of my finding *viduata* here. This species was frequent, though not abundant; and it was with intense surprise that I eagerly bottled two specimens of *C. sappho*, which I had heretofore seen only once alive, in lower South Carolina. How these two species took me back to my old collecting grounds, in the swamps near Charleston, S. C., where the cypress and gray moss made a twilight at midday, where Swainson's warbler hopped among the cane and the Anhinga birds soared over the black pools, and where *Catocala carissima* spread her gorgeous wings, as she flew from the brown bark of the pine trunks, or from the flat earth masses torn up by the roots of some prostrated tree known as a "hurricane root."

The following are the species caught here:

Catocala nubilis Hbn. Very common; appearing late in May. One of the few *Catocalæ* pitching readily upon grass or weeds, of any description; comes readily to light.

C. elonympha Hbn. Apparently rare. I have taken it but once, in daylight, resting on oak. Very abundant in lower South Carolina.

C. messalina Gn. Only one specimen, taken at light.

C. amica. This and its varieties very common, usually on oak trees. It has a curious habit, when startled, of flying around to the opposite side of the same tree, and, when followed, of repeating the performance, unless captured, again and again, getting higher and higher, until out of reach, but seldom flying off to another tree.

C. minuta Edw. Only one specimen, taken at light.

C. grynea Cr. Not common; occasionally taken at light.

C. micronympha Gn. Not common; a few taken on trunks and among branches and leaves of hawthorn and small "wild goose" plum trees. I have never seen it on trunks of larger trees.

C. cratægi Saund. A few taken at light and among *cratægus*.

C. ultronia Hbn. Common in thickets of wild plum, on which trees the larvæ feed.

C. ilia Cr. Quite common in its various varieties; have seldom seen two alike; frequently starts off before the tree is closely approached; is started readily by rapping; shows a preference for dense thickets of small trees, and lights in brush heads as well as on large trees; when once startled it is very wary and must be approached with great caution, equaling *C. lachrymosa* in this respect. In the South the larvæ feed on live oak.

C. parta Gn. Late in September several years ago I took a few on oak trunks; have not seen it since.

C. concumbens Walk. Apparently very rare. Only one taken in daylight in oak woods.

C. cara Gn. Also very rare, which seems strange; I have taken but one here, in daylight, in a dark hallway.

C. amatrix Hbn. I have only seen this occasionally here; all large, handsome specimens, like those from Southern swamps. One was secured after a twenty-foot climb up a hickory, the "catcher" holding on by his knees while he bottled the fly. Needless to say the "shinning" progress up the tree was slow and cautious.

C. epione Dru. Not rare; taken in apple orchards and among small oak undergrowth.

C. habilis Grt. Not rare; rests very quietly on large trunks, and is easily seen—by the initiated—and taken.

C. paleogama Gn. Most abundant; usually one-third of the day's catch; found in many varietal forms, the beautiful variety *phalanga* being the rarest. It is wonderful how difficult it is to see such a strikingly marked form as *phalanga*, but I usually rapped them up before I could detect them; while the uniformly colored normal form was readily detected at rest. I found this fly very restless, often flying up when I was two or three yards away, but after lighting again it could readily be bottled with average caution. I noticed with interest how often, especially in the afternoon, a moth of this species, startled from one tree and flying to another, would light directly on or very near another of the same species, startling the second and often several others away.

C. neogama S. & R. Quite common; frequently roused from the smooth brownish trunks of small dog-wood trees, with the color of which it closely harmonizes. Very wary when once startled.

C. subnata Grt. Frequent. I have never seen *piatrix* here, which seems odd.

C. robinsonii Grt. I have only taken it once here; have also taken it once near Charleston, S. C.

C. retecta Grt. and var. *flebilis* Grt. I found *flebilis* more abundant and less wild than the typical *retecta*, though the latter was quite common. Have taken the former also in the Piedmont region of South Carolina There are several intergrading forms found here.

C. *desperata* Gn. Very common towards end of season (late August), rarer in July. Easily seen and easily captured; frequently, after clapping the bottle over one, it would have to be roused by moving the bottle against it. Even after being rapped up only ordinary caution is necessary for a second approach.

C. *viduata* Gn. (*mœstosa* Halst.) This handsome Southern giant I found quite frequently this summer, though it was not common. Its habits are the same as in the Southern swamps; it shows a preference for grey-barked trees, is not hard to see at rest, sits quietly and is not hard to bottle, and when startled by rapping often lights again on the other side of the same tree. The streets of Columbia, S. C., with their double and often quadruple rows of aged water and willow oaks and hackberry trees, are a paradise for *Catocalas*. A stroll down these shaded streets in August, with the mercury about 100 degrees, will reveal such a quantity of *C. viduata* and other nice *Catocalæ*, to say nothing of the swarms of *Apaturus*, *celtis* and *clyton*, and noctuids innumerable, and with all the conditions for easy capture so perfect that one day alone in such a place throws all other *Catocala* collecting into the shade. Here have I taken *viduata* in such profusion that the desire to capture seemed almost to pall, and there would I direct any one wishing to know what *Catocala* collecting is at its best.

C. *lachrymosa* Gn. Fairly common, in endless variety, and very wild; probably the wildest species. They often start up before the tree is closely approached, and a cautious chase from tree to tree often ends in their ascending out of reach. They seem to prefer dark-barked trees.

sappho Strk. I saw and captured two this summer, in September, and late in the evening; these are all I have seen here, and are smaller a trifle than the only other one I have seen alive taken in South Carolina. I found no difficulty in bottling these, though I scarcely dared breathe as I slowly advanced the bottle.

C. insolabilis Gn. Quite common, though not hard to detect, and not very wild.

C. obscura Strk. Rare, or at least not easy to find; have taken about five here. They prefer large trees, and sometimes hide under the loose bark, and once I took one that had pitched in the grass.

Catocalas were very abundant this season; I often took fifty to sixty good specimens in a morning or evening's tramp. As usual I found the afternoon more productive than the morning. On hot days I found them plentiful in the morning, but usually they "roosted" high, and began to descend towards the roots in the afternoon, becoming more and more abundant towards dusk. I found day collecting more profitable than sugaring, and, after several attempts, gave up the latter for *Catocalas*. I have also found that medium sized oaks, with an abundant growth of small branches near the ground, such a growth as small white oaks frequently exhibit, were more thickly populated than bare trunks, and, on rapping such a tree, after vainly examining it, a half-dozen or more *Catocalas* would often start away. *Lachrymosa* and *viduata* seemed to prefer bare trunks. From August 4th until September 5th this year I took over 500 *Catocalas*, a large proportion being *C. paleogama*.

THE FOURTH OF JULY.

Collecting in the Cañon's Mouth.

BY HENRY SKINNER.

We could not be said to be "seeking the bubble reputation even in the cannon's mouth," but were after butterflies, not to speak of moths and other insects. The 2nd of July found us in the "City of the Saints;" and, judging from the amount of noise, patriotism was rampant, and the racket increased every hour until the evening of the Fourth, when it gradually died away like a passing thunder-storm. On the 3d we went to Red Butte Cañon, back of Fort Douglas, and had fair success collecting, and retired that night and tried to sleep through the fearful din. The morning of the Fourth was bright and propitious, and we started early for the home of our good friend G. Wesley Browning, who was to be our guide to his favorite collecting place, the City Creek Cañon, in the Wasatch Mountains, near Salt Lake City. After partaking of an excellent breakfast with our hospitable friend and his good wife we started for the cañon's mouth with our implements of war (on insects), ready for the fray. Thus far I have said "we," and I will stop a moment to explain who we were. The writer, from modest motives, can say nothing—his name will be found at the beginning of the article, but his companions are well known to the readers of THE NEWS. Mr. Philip Laurent, of Philadelphia, is a painstaking and careful collector, and has a really superb collection of moths and butterflies and also of Coleoptera, and his collections, for order and neatness, would be a revelation to many. Prof. A. J. Snyder, of Evanstown, Ill., is a most enthusiastic collector and camper, and his love for the "Rockies" makes them a magnet that he finds irresistible as each summer approaches. He claims to be able to "get over" sage brush faster than any living man and labors under the delusion that if he lives to be as old as Methuselah he will be able to untangle the genus *Argynnis*. Browning is a man that loves Nature in all her phases and it is a pleasure to know him. He has done excellent work, in spite of the fact that he is practically alone, and we all know the value of the sympathetic aid and encouragement of our entomological friends and companions. He is also an artist of ability and in the future will probably do all in his power to make the interesting fauna of his home better known. With good company, fine weather and a new field of work we enthusiastically looked forward to a day of rare pleasure and were not disappointed.

The cañon reminds one of our own Wissahickon, except that instead of hills its sides are mountainous, and the stream of ice-cold water runs over its rocky bed with great rapidity and in many places is white with foam and spray. In the damp places Papilios were very abundant and large bunches of them would be found standing side to side, sucking the moisture from the mud, and when disturbed would rise in great yellow clouds. Prof. Snyder took *eleven* specimens at one time, made up of *daunus*, *rutulus* and *eurymedon*, by placing the net over them as they thus rested. The writer made a sweep of the net into a "cloud" and secured seven at one stroke. Two other species of Papilio, *indra* and *zolicaon*, were taken, but they were scarce. *Indra* and *zolicaon* were found flying over a narrow and shallow part of the stream at the "forks," where the stream divides. *Parnassius clodius* was occasionally seen and taken, but could not be said to be abundant. *Smintheus* was not seen, but Prof. Snyder in former years took it abundantly at Park City, Utah.

Pieris rapæ, oleracea and *occidentalis* not infrequently fell victims to our nets, and from time to time the green under side of *Anthocharis ausonides* would flash in the sun and the delicate *julia* would make its appearance in the open. Of the Nymphalidæ we saw and captured *Vanessa milberti* and the almost cosmopolitan *antiopa*; *Limenitis weidemeyeri* sailed leisurely by or rested on the tip of a branch, often too high for a successful stroke. *Grapta zephyrus* and *Satyrus paulus* were taken, but only in one or two specimens. Of the polygamous genus *Argynnis* we captured *snyderi*, *meadii*, *platina*, *leto* and *chitone*. *Melitæa acastus* was plentiful in places and *Phyciodes tharos* was taken. In the Lycænidæ we took *Chrysophanus helloides* and *zeroe*; *Lycæna lycea*, *acmon*, *melissa*, *glaucon* and *amyntula*. The only species of *Colias* was *eurytheme* var. *eriphyle*. Hesperidæ were scarce, and we only took *Eudamus nevada*, *Pamphila taxiles*, *Pholisora catullus* and *Nisoniades juvenalis*. *Epicallia virginalis* in its multitude of variations was quite abundant. We visited the cañon also on the 5th and 6th of the month, and then left for Silver Lake, further in the mountains, where we camped at 8,600 feet and collected from this elevation to the tops of the peaks. Snow was fifty feet deep in places. I hope Prof. Snyder or Mr. Laurent will write about this portion of our outing and the good things taken.

OCCURRENCE OF STAGMOMANTIS CAROLINA IN NEW YORK.

PROF. M. V. SLINGERLAND.

I am just in receipt of a letter from Mr. H. F. Atwood, Rochester, N. Y., in which he states that "this past season I have taken a number of specimens of Mantids." I do not know as they are rare here but as I have never seen them before I feel that perhaps I ought to speak of them. My home is on the northern outskirts of Rochester, and I found many of them about my house, and they were also taken about Charlotte and Summerville. I did not hear of any further South. Those that I observed were either green or light brown, apparently two varieties.

Early in the spring I found a cluster of the eggs on a twig that had been blown from a tree. I identified it but not to my satisfaction, for until I saw the perfect insect I had no idea of their being found here. The specimens I observed were good feeders and in my opinion they should be encouraged, as their diet was entirely insects."

Although this insect has doubtless been reared many times in this State, from eggs received from the South, as we have done here at the insectary the past summer from eggs received from New Mexico, yet I find but one recorded instance of such rearings. Glover has stated that "it has been successfully raised as far North as the Hudson River by bringing the egg-cases from the Middle States. Several cases were found fastened to the trees the next autumn, but after that they entirely disappeared." It is said that the eggs probably could not endure our northern winters. It will be noted that Mr. Atwood found an egg-case in Rochester in the spring, but there is nothing to indicate that the eggs were alive. Mr. Scudder in his "Catalogue of the Orthoptera of North America" recorded two species of Mantids, *chlorophaea* and *phryganoides*, from New York State, the former near Watertown, N. Y., and the latter from New York. Mr. Scudder just writes me that "no Mantidæ are known to live normally in New York. One of the two species I recorded was probably imported in packing from Florida; the other was also either an accidental occurrence or a mistake of locality. I have never heard of *Stagmomantis carolina*, our northernmost Mantid, from as far north as New York." I have asked Mr. Atwood to continue observations upon the insect to determine if it survives the winter and appears again in the same locality next year.

NOTE.—Mr. Atwood writes me further under date of October 31, 1899: "I have no doubt but what I will be able to get specimens for you next summer, because surely we cannot have as severe a winter this coming year as we had the past, and I have every reason to believe that these insects that I observed here hatched out near my house. There were so very many of them that it could not have been accidental, their coming here. I have also reason to believe that the eggs that I found in the mass in the spring were also alive, they having that appearance and being not very much unlike the egg of the grasshopper. The insect did well in our latitude, it being quite slender in July and August and reaching a strong and sturdy growth the latter part of September, their abdomens being decidedly corpulent."

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer for each number three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., DECEMBER, 1899.

THE object of describing new species of insects is to make them known to the scientific world, but this fundamental principle in many cases seems to be overlooked by some of our systematists who describe as species such slight variations, brought about by distribution, climate or other causes, and frequently from such insufficient material as to make it quite impossible to know what they have in mind or what they mean by their descriptions. Perhaps the entomologist of the future will be a being who spends all his spare time and money wandering over the earth seeking types. Some day, perhaps, these names that have crept and unfortunately will creep into our future lists of species will be weeded out, but at the expense of much valuable time and study, and it would have been better had they never been described. Where there is the slighest doubt about a single specimen supposed to be new it would be far better to wait for adequate material than to rush into print and make a synonym. More time should be given to careful collecting through a series of years with accurate data on all specimens particularly in one locality. If this were done many interesting problems could be solved. During the past summer one of our subscribers spent considerable time collecting certain species, and his work shows conclusively that two names will have to be merged into one. This is more scientific and useful than constructing two names out of nothing. Instead of the individual going around seeking types another plan might be inaugurated, and that is building a cairn where the n. sp. is taken and putting all the information, etc., in a steel tube which should have a screw cap and be buried in the cairn for the information of all students,

DEPARTMENT OF ECONOMIC ENTOMOLOGY

Edited by Prof. JOHN B. SMITH, Sc. D., New Brunswick, N. J.

Papers for this department are solicited. They should be sent to the editor Prof. John B. Smith, Sc. D., New Brunswick, N. J.

EPHESTIA KUEHNIELLA AND ACANTHIA LECTULARIA.—In connection with the note contributed by W. G. Johnson in the September number of the ENTOMOLOGICAL NEWS, it may be of interest for me to add that *Ephestia kuehniella* occurs in this Colony. I have seen it at several local mills and have been told by millers that it i known in other and distant parts of the country. How long it has been about Capetown I have been thus far unable to ascertain, but there seems to be no evidence of its being a newcomer. The mill people say it causes them some inconvenience, but is by no means a serious pest. The mill buildings here are, as a rule, well built and of brick, and a considerable measure of cleanliness prevails; the principal one at Capetown is shut down twice a year and given as thorough clean-out, particular attention being bestowed to dislodge all of the "web" in the spouts. I understand that similar methods prevail at the other important mills. Compared with many American establishments, our mills are small and there is, besides, a lack of that extreme rush and bustle that characterizes most everything in Yankee-land. Perhaps it is owing to these circumstances that the flour moth is not very troublesome. No parasites have emerged in my rearing boxes, but there was no lack of *Tribolium* in the spouts which I had dragged for my material.

Mr. Johnson refers to the fumigation of buildings with hydrocyanic acid gas. I have carefully refrained from advocating the operation but a number of the foremen connected with the orchard fumigation at work in different parts of the colony, to my knowledge oblige their fruit-growing patrons by treating sleeping apartments in the dwellings. The results are said to be all that is desired. At my suggestion the Cape Government Railways some months ago adopted this fumigant to "disinfect" their rolling stock. For some years the problem of "what to do" sorely troubled even the head, of the department, and correspondence with railway managements in America and elsewhere elicited no information of value. Finally a measure involving the exhaustion of air from the coaches after enclosing them in a special chamber was proposed and a requisition sent to England for the necessary iron work; it was at this juncture that hydrocyanic acid gas was brought to the rescue. The simplicity and efficacy of the treatment was demonstrated by the fumigation of eight particularly bad coaches and by laboratory experiments it was shown that no injury befel any of the fittings, cloth, leather or metal; highly polished steel, it is true, did become slightly blued, but only when exposed to a far greater density of the gas than what proved fatal to even the eggs of the insect. The relief of the authorities when the head trimmer reported that not a single living insect was discovered among the multitude gathered by his workmen during their careful inspection of the treated coaches was really amusing, but the personally expressed thanks of the general manager, to say nothing of the calibre of the cheque left behind, was convincing of their appreciation of the service and of the past gravity of the situation. A corps of fumigators now takes charge of the through trains as they arrive from the north and for many months there has been but a single complaint; this one failed to be substantiated, for although the coach accused was immediately side tracked and overhauled no living bugs were found. Out of justice to the railroad management I feel bound to add that the infested condition of the coaches was by no means due to neglect or indifference, and that the abundance of the pest may be safely attributed to circumstances of climate and travel. The climate is a warm one, the train journeys are very long, and it is usual for travellers to carry their own bedding. The cape excels in at least three productions, diamonds, gold and bed-bugs.

Notwithstanding the potency of hydrocyanic acid gas as an insecticide, I cannot say that I am in favor of recommending it to the public for the destruction of house or granary pests. It is too terribly dangerous to trifle with and the least infringement in the necessary precautions may mean death to someone. Cyanide is now largely used for the extraction of gold and, despite of the utmost care in its employment, I am told that fatal accidents to native employees are not infrequent. My suggestion to anyone who contemplates using the gas in a dwelling is to first administer a slight amount of solid cyanide to an animal. Most persons will be so appalled and horrified by the suddenness of the end that they will have no desire remaining to assume risks in the house. I have repeatedly inserted small particles in bits of dry meat and laid these as baits for feline disturbers of my evening labors, and I am not exaggerating when I say that, as a rule, the creatures drop dead almost instantly and often with the meat still in their mouths; seldom do they die more than three or four feet from where the bait was laid. In house fumigation it is not danger to the operator that I fear, but such an happening as an unexpected intrusion by a party all unconscious of the danger. Accidents of such a nature are improbable, sure enough, but they are possible, and when the chances favor fatal consequences even remote possibilities should have great weight. The story has reached me that not long ago a native laborer, wholly unaware of his danger, sought to enter one of the railway coaches undergoing treatment. It seems that he came up unobserved and, as luck would have it, went straight to the only unlocked door in the train. One of the guards heard the door open, shouted just too late, but rushed up in time to drag the man out by the heels. Fortunately the gas was largely spent, but although the man was a stalwart Kafir the effects of the short exposure were such as to thoroughly frighten all who saw him. Now the operators employed at the railway are exceptionally careful workmen, in fact they were selected largely because of habitual prudence, and this near approach to an accident simply illustrates how with what appears all necessary precautions there is a grave element of risk in such operations. The doors to the carriages are ordinarily locked the key holes plugged, but at the last moment something was found to be defective with the lock of the door in question, and the watchmen chanced to be facing another way as the bare footed native came up. Might not an analagous circumstance occasionally happen in mills and houses, where at the best the risks are immensely greater? It is not as if there were no alternative measures applicable for granary and house insects and to me it seems a plain case of prudence dictating to let well enough alone. Hydrocyanic acid gas for orchard fumigation and for the disinfection of nursery stock in specially devised buildings is right enough, as it is also under proper precautions for the treatment of railway carriages that must be put into use again within a few hours, but to encourage its general use in closed buildings seems going to far. If to be used at all in dwellings, granaries and the like I think that all of the operations should be under the personal superintendence of a responsible party licensed by law. We have had no accident in the colony in three years' work with the gas in special chambers and in the orchard, but when disinfecting a few rooms at a boarding school one of the orchard operators gave himself and several others violent headache and nausea. One after another he told me he had to give up and go lay down. The bad effects were all the result of ill-considered procedure, but if an experienced fumigator makes mistakes in judgment what might not be expected from an ignoront beginner? CHAS. P. LOUNSBURY.

Cape Town, South Africa. October 10, 1899.

NOTE on *Telea polyphemus*—Cr., etc.—Since it appears that *T. polyphemus*—Cr. has not been reported from Mexico I wish to put on record here the capture of a ♂ by Prof. Luis Murillo at Jalapa, V. C., this month (April). *Eacles imperialis*—Drury has come to stay though still very rare in Cuernavaca, Mor., and in Jalapa, V. C. And *Actias luna*—*L.* is getting settled at Jalapa and (?) Orizaba, V. C. Although the last two moths are reported in the Biologia, C. A., Prof. Murillo declares they have been in evidence in Jalapa for only two or three years The city is almost entirely shut out from the north [illegible] at an elevation of 5,000 feet.

O. W. BARRETT, Museo, Tacubaya, D. F., Mexico.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

Dr. Herman Strecker has completed his valuable index to the species in Kirby's Lepidoptera Heterocera, Vol. 1, and is now preparing a list of the 417 types in his collection. This will be Supplement III to his Lepidoptera Rhop. et Heterocera. These publications may be obtained from the author.

Mr. Lancaster Thomas has returned from his annual trip to Cranberry, N. C., and reports that the collecting was unusually poor owing to the very dry weather during the summer.

Dr. William Barnes was fairly successful in his collecting trip to Southern Arizona.

Prof. H. A. Pilsbry collected a lot of interesting *Cychrus* at Clingman's Dome, Blount Co., Tenn. They are now in the fine collection of Mr. H W. Wenzel, of Philadelphia.

I notice in the report of the American Entomological Society, held June 22d, that you reported *Melitaœa harrisii* as having been taken at Lopez, Sullivan county, Pa. I took one good specimen of same, June 15th, at Plymouth, Luzerne county, Pa., but saw no others. This is the first specimen I have taken in my four years collecting in this vicinity and have not heard of its being taken by anyone else around here.

I took one good fresh specimen of *Euptoieta claudia* in September, 1898 and another in September, 1899. Alfred E. Lister.

Notes on Exyra Rolandiana.—While looking through some old volumes of Psyche recently I noticed in II., p 39, the description and an account of the habits of the larva of *Exyra rolandiana* by Mr. Thaxter. The species is quite common in Durham wherever its food plant (*Sarracenia*) flourishes, and the larvæ have been found not in the leaves as described by Mr. Thaxter, but within the flowers and buds the last of May and first of June. The imago appears the last of June and first of July, and has been observed resting in the leaves of its food plant.

Mr. Thaxter says that the larva is "delicate and difficult to rear" but such was not my experience with those taken well along toward maturity. About half a dozen were collected the last week in May and placed in wide mouthed vials with a piece of the ovary of the pitcher plant flower, securely plugged with cotton and left to themselves. Most of them completely finished the food that was given them and one or two were dwarfed for lack of more, but every one of the lot produced a perfect imago. I would recommend collectors who have access to a swamp in which pitcher plant grows to collect and rear these larvæ for perfect specimens of this dainty little noctuid are acquisitions to any collection.

W. F. FISKE.

AN APPEAL IN BEHALF OF ENTOMOLOGY AND KINDRED SCIENCES.

In the interest of natural history it would be a good plan if every naturalist throughout the United States would petition their representatives in Congress to have paragraph 666 of the tariff law of 1897 amended, so that specimens of natural history for scientific collections be admitted free of duty, whether intended for private or public use. The paragraph in question comes under the "free list" and reads as follows: "Specimens of natural history, botany and mineralogy, when intended for scientific public collections and not for sale."

Natural history, especially entomology, merits all the encouragement possible and an excellent way to further an interest in it would be to remove the barrier from the private student. All who read this are earnestly requested immediately to petition their representatives at Washington urging that the section in question be amended and that without delay. EDW. A. KLAGES.

IN studying the relations between the species of the genus *Catocala* I acquired the conviction that for the solution of the problem it is indispensable to resort to experiments with elevated and reduced temperature after Standfuss. Some results from the breeding of European species are already obtained. Unfortunately the most interesting species, those with the black hind-wings, are inaccessible to the European experimenter, the eggs of American catocalas not being on sale.

I determined therefore, by your mediation, to address to the members of the American Entomological Society and others a request to procure for me the living eggs of any species of *Catocala*, which are so abundant in the United States. The black species are especially desired, the indication of the food-plant is also necessary.

In exchange I can offer many species (well prepared) of my collection of Russian Lepidoptera, St. Petersburg, Crimean, Siberian.

NICHOLAS KUSNEZOW, Physiological Laboratory of University,
St. Petersburg, *Russia*.

I HAVE had the pleasure of collecting Coleoptera a few days in Tioga county, Pennsylvania, during this summer (1899), and a few notes I have kept that may be of interest to other collectors. One pine tree trap, cut early in May, produced in four months the following catch: *Hylobius pales*, very abundant. *Pissodes strobi*, not abundant, *Eurymycter fasciatus*, very abundant. *Tamicus pini*, very plentiful. *Hylurgops pinifex*, not abundant. *Hister lecontei*, in great numbers. *Pytho deplanatus*, very abundant. *Monohammus tittilator*. *M scutellatus* and *M. confusor* were almost in swarms, but *Monohammus maculosus* very scarce. In July and August *Ac-Acanthocinus obsoletus* and *Liopus variegatus* were taken in small numbers. *Asemum atrum*, quite plenty in August, *Xylotrechus undulatus*, but a few good specimens and *Rhagium lineatum* was often present. *Clerus quadriguttatus*, *C. nigrfrons* and *C nigripes* could be taken by the dozens. Later a good number of *Chrysobothris*, *dentipes* and *C. femorata*, were taken. So all of this catch was from a few pine logs carefully watched, and often rolled over on the grass. J. C. WARREN. Crooked Creek, Pa.

THE Zoological Department of the Massachusetts Agricultural College is doing good work in Entomology and has a strong teaching force. Prof. C. H. Fernald, Ph D , being ably assisted by Prof. R. S. Lull, M. S., and his son, Dr H. F. Fernald, who for ten years past was Professor of Zoology in the Pennsylvania State College and for two years Economic Zoologist.

THOSE who have changed their addresses since reporting for the Entomologists' Directory will kindly notify the undersigned at once, as the copy will soon be ready for the printer. Those that miss the opportunity to have their names in the Directory will surely regret it. It costs you nothing. HENRY SKINNER,
Box 248, Philadelphia.

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Entomological Literature,

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in HEAVY-FACED TYPE refer to the journals, as numbered in the following list, in which the papers are published ; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English ; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

1. Proceedings of the Academy of Natural Sciences of Philadelphia, 1899, part ii.—**3.** The American Naturalist, Boston, Oct., '99.—**5.** Psyche, Cambridge, Mass., Nov., '99.—**7.** U. S. Department of Agriculture, Division of Entomology, Washington ; publications of, '99.—**8.** The Entomologist's Monthly Magazine, London, Nov., '99 —**9.** The Entomologist, London, Nov., '99.—**10.** Nature, London, '99 —**12.** Comptes Rendus, l'Academie des Sciences, Paris, Sept. 25, '99.—**15.** Biologia Centrali-Americana, London, pt. cxlvii, April; pt. cxlviii, June;

pt cxlix, Aug. '99,—**21**. The Entomologist's Record, London, Oct.' 15, '99.—**26**. Appleton's Popular Science Monthly, New York, Nov. '99.—**35**. Annales, Société Entomologique de Belgique, xliii, 9, Brussels, Oct. 4, '99.—**41**. Entomologische Nachrichten, xxv, 20, Berlin, Oct., '99 —**84**. Insekten Börse, Leipsic, '99.—**118**. Memoirs and Proceedings. Manchester [England] Literary and Philosophical Society, xliii, '98-'99; rec'd. Oct. 17. '99.

The General Subject.—Axenfeld, D. Some observations on the sight of Arthropods, Archives Italiennes de Biologie, xxxi, 3, Turin, Sept. 23, '99.—Bordage, E. On a particular mode of protection of the appendages in course of regeneration after artificial section among insects, **12**.—Carret, A. M. F. Guillebeau and his entomological works (cont.), L'Echange Revue Linnéenne, Lyon, Oct., '99 —Coupin, H. Singular mode of locomotion in insects, figs., La Nature, Paris, Sept, 30, '99.—Enderlein, G. Contribution to knowledge of the structure of the cross striped muscles of insects, 1 pl. Archiv für Mikroscopische Anatomie und Entwicklungsgeschichte, lv, 1, Bonn, Oct. 11, '99.—Henneguy, L. F. The modes of reproduction of insects, Bulletin, Société Philomathique. Paris (9), i, 2, '99.—Heymons, R. On W. M. Wheeler's "Anemotropism and other tropisms in Insects," Zoologischer Centralblatt, Leipsic, Sept. 26, '99.—Knuth, P. Handbuch der Blütenbiologie. II Band: Die bisher in Europa und in arktischen Gebiet gemachten blütenbiologischen Beobachtungen, 2 Teil: Lobeliaceæ bis Gnetaceæ. Leipzig Verlag von Wilhelm Engelmann. 1899. figs., 705 pp.—Lenecek, O. Jumping beans, Verhandlungen. Naturforschenden Vereins in Brünn, xxxvi, '98.—Plateau, F. Vision in *Anthidium manicatum* L., **35**.—Poulton, E. B Report of the Hope Professor of Zoology [on the Entomological collections, etc., at Oxford], Eleventh Annual Report of the Delegates of the University Museum for 1898, Oxford.—Schwarz, E. A. List of insects hitherto known from the Pribilof Islands, in: The Fur Seals and Fur Seal Islands of the North Pacific Ocean, by David Starr Jordan. Part 3, Washington, Government Printing Office, 1899.—Sharp, D. Insects, part II. See review, *post.*

Economic Entomology.—Anon. The investigation of the malarial parasite, **10**, Oct. 5.—Anon. Some means for combatting *Schizoneura lanigera*, Wiener Illustrirte Garten-Zeitung, Oct., '99.—Bancroft, T. L. On the metamorphosis of the young form of *Filaria bancrofti* Cobb (*F. sanguinis hominis* Lewis, *F. nocturna* Manson) in the body of *Culex ciliaris* L., house mosquito of Australia. Abstract of Proceedings, Royal Society of New South Wales. Sydney, June 7, '99.—Celli, A., and Casagrandi, O. On the destruction of mosquitoes: contribution to researches with mosquito-killing substances, Centralblatt für Bakteriologie, Jena, Oct. 14, '99.—Chittenden, F. H. The squash-vine borer (*Melittia satyriniformis* Hbn), figs., 7, circular

No. 38, second series, Apr. 22; The common squash bug (*Anasa tristis* DeG.), figs, **7**. circular No, 39, second series, May 5.—Fernald, H. T. Supplementary report of the Zoologist: some insects injurious in Pennsylvania, figs, Report of Department of Agriculture of Pennsylvania for 1898, pp. 373–443. [Harrisburg Pa.] Wm. Stanley Ray, State Printer of Pennsylvania, '99.—Howard, L. O. Three insect enemies of shade trees, figs, **7**, Farmers' Bulletion, No. 99, May 26; Spider bites and "kissing bugs." figs., **26**.—Leonardi, G. *Pulvinaria camelicola*. Sign. and method of combatting it, figs., Annali, R. Scuola Superiore di Agricoltura in Portici, (2), i, 2, Naples, '99.—Lounsbury, C. P. Report of the Government Entomologist for the year 1898, Cape of Good Hope. Dep't. of Agriculture, Cape Town, W. A. Richards & Sons, Government Printers, 1899, 9 pls.: Ibid. [Numerous Notes on Economic Entomology from the Cape of Good Hope Dep't of Agric., reprinted from the Agricultural Journal, Cape Town, '98 and '99. Many of these have been previously recorded, but we add] 1899, No. 6. The Wattle bag-worm, figs.; No. 25, Bean *Bruchus*, figs: No. 26, Cabbage Aphis, figs.—Macdonald, I. Mosquitoes in relation to Malaria, New York Medical Journal, Oct. 14, '99—Marlatt, C. L. The principal insect enemies of the grape, figs., **7**, Farmers' Bulletin, No. 70, '98. The peach twig-borer: an important enemy of stone fruits, figs., **7** Farmers' Bulletin, No. 80, '98.—Ross, R. The mosquito theory of malaria, **26**.—Schg, C. On the fight against scale insects. **84**, Oct. 19.—Smith, J. B. Crude petroleum as an insecticide, 4 pls, Bulletin 138, New Jersey Agric. Exper. Stations, New Brunswick, Sept. 5, '99.—Wilcox, E. V. Abstracts of recent publications, **7**, Experiment Station Record. xi, 2.—Woods, A. F., and Dorsett, P. H. The use of hydrocyanic acid gas for fumigating greenhouses and cold frames, figs., **7**, circular No. 37, second series, Jan. 10.

Arachnida.—Cambridge, F. O. P. Arachnida Araneidea, vol ii, pp. 41–56, pls. iii-iv,* **15**.—Cambridge, O. P. Arachnida Araneidea, vol. 1, pp. 297–304, pls. xxxi-xxxii,* **15**.—Nordenskiold, E. Contributions to knowledge of the morphology and classification of the Hydrachnidæ, 2 pls., Acta Societatis Scientiarum Fennicæ, xxiv, 5, Helsingfors, Mar. 14, '98: Rec'd. Nov. 7, '99.—Osborn, H. Acarina,* figs. in: The Fur Seals and Fur Seal Island, etc., by David S. Jordan, pt. 3, Washington, Gov't. Printing Office, '99.

Peripatus and Myriopoda.—Poulton, E. B. Peripatus in the Malay peninsula, **10**, Oct. 19.—de Zograf, N. On the lateral cephalic organs of *Glomeris*, **12**.

Orthoptera—Burr, M. Notes on the Forficularia, Annals and Magazine of Natural History, London, Oct., '99.—Scudder, S. H. Two genera of North American Decticinæ,* Proceedings, American Academy of Arts and Science, xxxv, 5, Boston, Oct. '99. The species of *Myrmecophila* in the United States,* 5; A comparison of the systematic distribution of European and North American Orthoptera, 5.

Neuroptera.—Fletcher, J. *Chrysopa* larva in a new role Ottawa Naturalist, Nov., '99.

Hemiptera.—Champion, G. C. Rhynchota Heteroptera, vol. ii, pp. 217-264, pls. xiii-xv,* 15.—Cockerell, T. D. A. Some notes on Coccidæ,* 1.—Dolby-Tyler, C. H. The development of *Ceroplastes roseatus* Towns, &Ckll., 1 pl., Transactions, Entomological Society of London, '99, pt. iii, Sept. 30, '99.—Fowler, W. W. Rhynchota Homoptera, vol. ii, pp. 225-248 pl. xv, 15.—Heymons, R. Contributions to the morphology and development of the Rhynchota, 3 pls., Abhandlungen, kais. Leopold.-Carol. Deutschen Akademie der Naturforscher, 74 Bd. Halle, '99, Webster. F. M. Have we more than one species of *Blissus* in North America? 3.

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Diptera.—Aldrich, J. M., and Turley, L. A. A balloon-making fly, figs., 3.—See also Economic Entomology, various authors.

Lepidoptera.—Bankes, E. R. [and Walsingham, Lord.] *Lithocolletis concomitella*, n. sp., and its nearest allies, 8—Druce, H. Lepidoptera Heterocera. vol. ii, pp. 537-552, pl. xcix,* 15.—Dyar, H. G. Life histories of North American Geometridæ, vi, 5.—Godman, F. D., and Salvin, O. Lepidoptera Rhopalocera, pp. 449-460, pl. xci [Hesperidæ*], 15.—Hamlyn-Harris, R. *Pyrameis atalanta* 500 miles from land, 21.—Merrifield, F. Gradual formation of pigment on the dark pupa of *Papilio machaon*, 21.—Schultz, O. List of the species of palæarctic Macrolepidoptera hitherto found infested with thread-worms, 84, Oct. 26—Semper, G. Heterocera in: Reisen im Archipel der Philippinen von Dr. C Semper. Zweiter Theil, wissenschaftliche Resultate, Bd. VI, Lieferung 3. Wiesbaden, C. W. Kreidel's Verlag, '99 7 pls. Snyder, A. J. American Lepidoptera [collections of], Popular Science, New York, Oct., '99.—Soule, C. G. Rearing larvæ in tin boxes, 5.—Watson, J. On *Calinaga*, the single genus of an aberrant subfamily of butterflies, **118.**

Hymenoptera.—Alfken, J. D. The *Xylocopa* species of the Hawaiian Islands, not *X. æneipennis* DeG., but *X. chloroptera* Lep., **41.**—Cameron, P. Description of a genus and species probably representing a new tribe of Hymenoptera from Chili, **118.**—Cockerell, T. D. A. The species of the bee genus *Dieunomia*,* **9.**—Forel, A. Hymenoptera. vol. iii, pp. 1-80, pls. i-iii.* [Formicidæ, Myrmicidæ] **15**; Letter from Faisons [North Carolina, dated July 28, 1899, containing observations on ants], **35.**—Fox, W. J. Contributions to a knowledge of the Hymenoptera of Brazil, No. 7: Eumenidæ (genera *Zethus*, *Labus*, *Zethoides*, *Eumenes*, *Montezumia* and *Nortonia*) **1.**—Konow, F. W. New Tenthredinidæ from South America, **41.**—Paulcke, W. On the question of the parthenogenetic origin of the drones (*Apis mellifica* male), figs., Anatomischer Anzeiger, Jena, Oct. 5, '99.—Plateau, F. See the General Subject.

INSECTS. PART II. Hymenoptera continued (Tubulifera and Aculeata), Coleoptera, Strepsiptera, Lepidoptera, Diptera, Aphaniptera, Thysanoptera, Hemiptera, Anoplura. By David Sharp, London: Macmillan and Co., Limited. New York: The Macmillan Co. 1899, 8vo, pp. xii, 626; 293 figs. Received from John Wanamaker.

This, the sixth volume of the Cambridge Natural History, edited by S. F. Harmer and A. E. Shipley, concludes the account of the insects begun in Vol. V. This latter, published in 1895, dealt with Peripatus and the Myriapods by different authors, and devoted 483 pages to a general account of Insects and of the orders Aptera, Orthoptera, Neuroptera (in the wide sense), and the Hymenoptera Sessiliventres and Petiolata-Parasitica.

Those who know Dr, Sharp's previous volume need only be told that the present one is truly a continuation. By its completion we have now an excellent series of modern books of reference, none of which deals with precisely the same aspect of entomology, although they must and do repeat many facts of primary importance. Thus for a general sketch we have Carpenter's "Insects, their structure and life," noticed in the November NEWS, for an introduction to taxonomy Comstock's "Manual;" Packard's "Text Book of Entomology" is a store house for anatomy and physiology; Smith's "Economic Entomology" presents the applied science; while Sharp's "Insects" deeply interests us by the prominence which is given to habits.

Probably most persons will be puzzled, like ourselves, at the order in which the different groups of insects are discussed by Dr. Sharp, In a general way that order corresponds to increasing complexity, but the position of the Hymenoptera in particular seems abnormal. As our readers may be interested in having presented to them an abridgment of the classification of the larger orders as employed in this volume, we add the following table:

Hymenoptera	Tubulifera	Chrysididæ.
	Aculeata	Anthophila. Diploptera. Fossores Heterogyna (Formicidæ).
Coleoptera	Lamellicornia. Adephaga or Caraboidea. Polymorpha. Heteromera. Phytophaga. Rhyncophora. Strepsiptera.	
Lepidoptera.	Rhopalocera and Heterocera.	
Diptera	Orthorrhapha Nemocera. Orthorrhapha Brachycera. Cyclorrhapha Aschiza, Cyclorrhapha Schizophora. Pupipara.	
Hemiptera	Heteroptera	Gymnocerata. Cryptocerata.
	Homoptera	Trimera Dimera. Monomera.
	Anoplura.	

The most interesting part of the book is probably the section on the Hymenoptera, by reason of the striking, various and wonderful habits of these insects. There are, however, many similar observations recorded for other groups and they prove most enticing reading when one opens the book at random. The illustrations are as delightfully clear and clean as is the typography, so that the book is pleasing in every way, and we must expect weight in a volume which treats of insects. Author and readers are alike to be congratulated on the results of Dr. Sharp's labors amidst the bewildering riches of entomology. P. P. C.

DOINGS OF SOCIETIES

MINUTES OF NEWARK ENTOMOLOGICAL SOCIETY.

Regular meeting was held at Town Hall, Sunday, October 8th, at 3:00 p. m. Vice President Kemp presided and eight members were present, including Prof. Smith.

Mr. Angleman and Mr. Buchholz reported *Pieris protodice* common near Newark.

Mr. Weidt exhibited a series *Cleora umbrosaria*, a Geometrid, showing the intergrades from the dark to the light forms. The ♀ as a rule were lighter. The insect was very common at Forrest Hill near Newark, on September 19th, and were taken on the trunks of hemlock trees. From eight to ten specimens were seen on one tree.

Mr. Buchholz found *Schinia brevis* plentiful, locally, near Elizabethport, September 9th.

Mr. Kemp reported the capture of *Pseudanthroecia coracias* at Elizabeth, July 7th.

Mr. Weidt donated a pen to the society as the last one had been placed on the retired list on half pay, having been in service for over two years. Meeting adjourned A. J. WEIDT, Secretary.

A meeting of the American Entomological Society was held October 26th. Mr. C. W. Johnson, Vice President, in the chair. Dr. Skinner presented 178 insects from Utah. Mr. Liebeck stated that the society had purchased 206 specimens, 73 species of Coleoptera from the Griffith collection. Dr. Skinner exhibited the mouth parts of the *Carabidæ* from which illustrations had been made for Dr. Horn's paper on the family These specimens were originally gummed on card board but had been lately remounted on glass microscope slides by Prof John B. Smith. They are now in appropriate boxes and all numbered in accordance with Dr. Horn's paper. Mr. Ulke of Washington, who was present and by the way was the first member elected to the society, spoke of the great value of Dr. Horn's work and also complimented Prof. Smith for putting the material in a condition to be available for study for an indefinite period. A unanimous vote of thanks was tendered Prof. Smith for his valuable work. Mr. Laurent exhibited the *Coleoptera* collected by Prof. A. J. Snyder and himself in Utah, principally at the head of the big Cottonwood Canon. The catch was a good one considering that less than 100 hours collecting was had. The speaker was surprised to see such a small amount of variation in *Cicinaela longilabris. Lucanus mazama*, *Gaurotes cressoni*, *Eleodes extricata* and *Pristoselis* were specially mentioned; the latter were abundant on thistles. The photographs taken on the trip were shown. Dr. Calvert exhibited the *Odonata* collected by Dr. Skinner in Utah. There were thirty-two specimens representing fifteen species. A pair of *Somatochlora semicircularis* in fine condition were mentioned. *Plathemis subornata* ♂, ♀, are much like the Eastern species. They differed in that in the East the sexes are marked differently while the Western ones are alike. *Libellula forensis* was said to be the Eastern representative of *L. pulchella*. *Ophigomphus occidentis* was taken. The difficulties of this genus were mentioned. *Enallagma calverti* was said to be very close to *annexum*. The differences in the appendages were described. The sexes of *calverti* were taken in coitu. Some New Jersey specimens of *Odonata* received from Mr. Davis were also shown. Two specimens of what was supposed to be *Argia translata* were taken at New Foundland, N. J., and were of peculiar interest because they correspond most closely with specimens from Arkansas, Texas and Mexico. The types came from Venezuela Dr. Skinner exhibited the Lepidoptera taken by himself in Colorado and Utah during the past summer. Mr. Johnson exhibited the *Diptera* taken by Dr. Skinner in Utah and said there was a new species of *Symphoromyia* and a *Tipula* not yet determined. *Stratiomyia nevadæ* ♀ was of much interest. The differences between the sexes were pointed out. The greater part were Pacific slope species. *Dasyllis columbica* was of interest because it mimics the bumble bee which has fulvous pile the same as the fly. The flies collected by Mr. Laurent were also exhibited.

Mr. Ulke said he did not believe in rare species. It means ignorance of locality, time or habits. Say described two water beetles received from Melsheimer, as *Hydrocampus rotundatus*. Dr. Horn did not notice these in his studies and it subsequently turned up in Massachusetts. Mr. Ulke also found them in some small puddles and took 50 or 60 in a day. A small species of *Silphidæ*, *Pinodytes cryptophagoides* agreeing with Mannerheim's specimens from Alaska was also taken in the woods near Washington, D. C., and was found in a deep hole near a stump. It is a blind species and is found by sifting. Mr. Wenzel stated that his son had found a *Pselaphus* new to his collection, in the roots of sedge His experience in sifting and finding rare species was given. He corroborated what Mr. Ulke said about so called rare species.

DR. HENRY SKINNER, Recorder.

At the October meeting of the Feldman Collecting Social held at the residence of Mr. H. W. Wenzel, 1523 South Thirteenth street, Philadelphia, twelve members were present.

Mr. Johnson exhibited his collection of Chironomidæ, containing the following number of species from New Jersey: *Chironomma*, 16; *Cricoptopus*, 3; *Camptocladius*, 1; *Orthocladius*, 2; *Eurycnemus*, 1; *Tanypus*, 8; *Ceratopogon*, 23; *Heteromyia*, 1; a total of 55.

Prof. J. B, Smith stated the probable existence of many more species of this family in New Jersey than were represented in the above list. Very little is known of their early stages and while the larvæ are said to live on decaying vegetable matter in water, there is one species, *Cricoptopus sylvestris* which is injurious to vegetation, the larvæ mining the leaves of the water lily, *Victoria regiæ*.

Mr Johnson referred to a former commmunication on spirally girdled hickory twigs, and stated he had since reared two specimens of *Heterachthes quadrimaculatus* therefrom.

Mr. H. Wenzel exhibited his collection of Scydmænidæ and Pselaphidæ containing about 150 species and 900 specimens. Over 80 species were from the vicinity of Philadelphia, 79 of which occur in New Jersey, although he believed all will eventually be found in both Pennsylvania and New Jersey.

Prof Smith called attention to a collection of the mouth parts of Carabidæ on which Dr. Horn's classification of that family was based. He had undertaken the mounting of these specimens on microscopic slides, the specimens being originally pasted on card board. In every instance the specimen was simply named generically. The slides will be arranged in boxes, the latter numbered to correspond to the plates of Dr. Horn's paper, and each slide is numbered the same as the corresponding figure on the plates. He stated that the figures are not exact, the author bringing out only certain salient features of the mouth parts and in the speaker's opinion thereby overlooking other important characters.

A vote of thanks was extended Prof. J. B. Smith for the elegant collation given the members at the last meeting.

Dr. Skinner related the experiences of his recent trip to the Wasatch Mountains, Utah, in company with Messrs. Snyder and Laurent. WILLIAM J. FOX, Secretary.

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